# The Builder.

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THE successful accomplishment of the Atlantic telegraph would be an event, in the *matter-of-fact* history of the world, standing out beyond all others as a consummation of progress, just such as, in the world's *prophetic* history, is the "drying up" of the "mystical river Euphrates," whatever that may be, and the making of "a way" to the west thereby for "the Kings of the East," whoever these may be. There would even be as much feasibility in the attempt to interpret the one of these series of events as a prediction of the other, as there is in not a few other similar attempts. The coming year, it is to be hoped, will see the great telegraphic event successfully accomplished.

The first indication or suggestion of the possibility of throwing a telegraphic cable across the Atlantic ocean, and of so uniting the two opposite hemispheres of the globe, is said to have been made by Professor Morse, of America, in August, 1843, in a letter to the Secretary of the United States Treasury. There was a vast deal to do, however, even in the advancement of the principles of electric telegraphy, as subsequent progress has proved, ere such an event was really possible; and Professor Faraday appears to have been not far wrong in predicting that on these principles, as then ascertained, it was very doubtful whether an Atlantic telegraph were really possible.

Towards the close of last year only, had the electrical element of wide-ocean telegraphy assumed its present phase. Science had then shown* :—

That gutta-percha covered *submarine* wires do not transmit as simple insulated conductors, but that they have to be charged as Leyden jars, before they can transmit at all.

That, consequently, such wires transmit with a velocity that is in no way accordant to the movement of the electrical current in an unembarrassed way along simple conductors.

That magneto-electric currents travel more quickly along such wires, than simple voltaic currents.

That magneto-electric currents travel more quickly when in high energy than when in low, although voltaic currents of large intensity do not travel more quickly than voltaic currents of small intensity.

That the velocity of the transmission of signals along insulated submerged wires can be enormously increased, from the rate indeed of of one in two seconds, to the rate of eight in a single second, by making each alternate signal with a current of different quality, positive following negative, and negative following positive.

That the diminution of the velocity of the transmission of a magneto-electric current in induction-embarrassed coated wires, is not in the inverse ratio of the squares of the distance traversed, but much more nearly in the ratio of simple arithmetical progression.

That several distinct waves of electricity may be travelling along different parts of a long wire simultaneously, and within certain limits, without interference.

That *large* coated wires used beneath the water or the earth are worse conductors, so far as velocity of transmission is concerned, than small ones, and therefore are *not so well suited as small* ones for the purposes of submarine transmission of telegraphic signals; and,

That by the use of comparatively small coated wires, and of electro-magnetic induction-coils for the exciting agents, telegraphic signals can be transmitted through 2,000 miles with a speed amply sufficient for all commercial and economical purposes.

Upon this electrical basis the question of oceanic telegraphy was standing when the present year dawned.

In the working of the great telegraph, the chain of connections, so far as it has been linked together up to the present time, stands thus :—

A powerful voltaic current goes through a generating coil near at hand. The generating coil makes a temporary magnet. The magnet produces a transmission current in a secondary coil. The current crosses the Atlantic in the cable, and makes a temporary magnet on the farther side of the ocean. The temporary magnet works a permanent magnet hung on a pivot, so that it can traverse. The next link in the chain is this: there is a local short-circuit voltaic battery standing ready near the recording instrument, and this battery has its electrical flood-gates opened when the permanent magnet traverses one way, and shut when it traverses the other. When the flood-gates are opened, the current from the local battery flows out, and prints the message it is desired to record. The perpetual maintenance batteries, double induction coils, and springless sensitive receiving instruments, designed for the work of the ocean telegraph, are most of them inventions for which patent rights are held by the company. The actual recording work of the telegraph will be performed by the ordinary instrument of Professor Morse, carefully adjusted in the workshop of the company.

In this recording instrument, a ribbon of paper is unrolled from a hollow cylinder or drum by a train of clock-work, and, as it is unrolled, a sharp style, magnetically directed, indents a series of dots or lines upon the paper. When the style is thrust down only for an instant as the paper is dragged along beneath, a *dot* is impressed. When it is kept down for a little more than an instant, a lengthened line or *dash* is left on the onward moving paper as a track. The style is thus magnetically controlled.

The "telegraphic plateau" is a very singular engineering feature in the Atlantic telegraphic project. It is a comparatively narrow band which has literally and actually been *laid down*, as it were on purpose, mainly by that great and celebrated engineer, the Gulf Stream, which has been, for thousands of years at least, at work in carrying northwards the *débris* of microscopic tropical shells, and dropping them into the yawning depths of the Atlantic Ocean at a certain parallel of latitude, and so constituting the telegraphic plateau which looks exactly like a raised railway-path of Titanic dimensions running across a country of tremendous ravines and rocky heights. The Gulf Stream, however, has no doubt had considerable assistance afforded it by the southward cold currents bearing mud-loaded icebergs: these would melt and drop their loads regularly in the same intermediate region. The contrast between the plateau and the awful yawning depths of the Atlantic Ocean south and north of its parallel, as shown in charts appended to the work from which we have been quoting, is a very striking and extraordinary one. This plateau has been found, by innumerable soundings, to be the only available or practicable route for an Atlantic telegraph line, from its moderate depths as well as from its gradual descent and ascent, and its comparatively level course.

Excellently well adapted, as the beautiful and elaborate arrangements appear to be, for the facilitation, to the utmost possible extent, of the winged words of the modern Mercury, what will the general reader think when we tell him that the swiftest possible result of such operations is absolutely a slow process in comparison with a new one, of which modern science has just caught a glimpse? This new process, however, is not one that is likely by any means to supersede recent arrangements, at least to any extent: it would rather appear to be a timely aid, addition, and consummation merely of those ingenious processes which have made the telegraph what it now is. We have already noted the advent of this climax to electro-telegraphic progress. Steam — all-powerful and Protean steam—is the agent now about to mount the telegraph and "grease the lightning." Whether the special form in which it is proposed to apply the power of steam to the generation of the requisite electricity and to the transmission and recording of messages,—set up before hand, and stamped off, wholesale, by the recording telegraph,—be in all respects the matured and practicable one which it is considered to be, we cannot even yet assure our readers; but we can, at least, now give them a few more details as to the *modus operandi*.

The invention, then, which is to supersede the present *tedious* (!) processes, and work the telegraph by steam instead of by hand, is in general as follows :—

A series of gutta percha bands, about six inches wide and a quarter of an inch thick, are coiled on wheels or drums arranged for the purpose. These bands are studded down both sides with a single row of holes at short intervals apart. When a message is to be sent, the clerks wind off these bands, inserting in the holes small brass pins, which, according to their combinations in twos or threes (with blank holes between), represent certain words or letters. In this manner the message is, as it were, "set up" in the bands with great rapidity, and if the number of bands employed be sufficiently large—say as numerous as the compositors employed in a large printing-office,—messages equal in length to five or six columns of a newspaper, for example, could be set up and ready for transmission in the course of a single hour! Of course this operation in no respect interferes with the telegraph wire itself, which continues free for use until the bands of messages are actually being despatched. The gutta-percha bands when full are removed to the instrument-room, a simple appliance preventing any derangement or falling out of the pins while being moved about. In the instrument-room, the bands are connected with ordinary steam machinery, by which they are drawn in regular order with the utmost rapidity between the charged poles of an electrical machine, in such a manner that, during the moment of each pin's passing, it forms electrical communication between the instrument and the telegraph, and a signal is transmitted to the other end of the wire, where the spark perforates a paper and records the message. The only limit to the rapidity of this operation is the rate at which the bands can be drawn, since the electrical contact of each pin, even for the 200th part of a second, is more than sufficient to transmit a word or signal from London and register it in America. As the message is recorded, say in America, with the same rapidity as that with which it is transmitted from London, a number of reading clerks, of course, will be requisite in order to translate it, by dividing it into small portions, and this they may do with almost as much facility as it has been sent.

The inventor of this new development of

* *Vide*, "The Electric Telegraph: a History of Preliminary Experimental Proceedings, and the descriptive Account of the present State and Prospects of the Undertaking," published in July, 1857, by order of the Directors of the Company. London: Jarrold and Sons, 47, St. Paul's Churchyard.

electric telegraphy, as we have before noted, is Mr. Isham Baggs.

Whether the precise mode in which the company who are carrying out Mr. Baggs's invention mean to apply the power of steam to the telegraph, be the best possible, or the most practicable or advantageous mode or not really signifies little: the idea, as we have said, is an excellent one, and there cannot be a doubt but that it will very shortly be realized in some shape or other, whereby all its obvious advantages will be fully attained, and telegraphic messages be immensely cheapened and vastly multiplied, to the substantial benefit of the public no less than of the telegraphic companies: and, it is to be hoped, of the inventor himself and the company by whose enterprise the new development is being worked out into practice.

And now, reverting to the Atlantic telegraph, the application of steam power to which would be an immense advantage, let us say a few words on the present state and prospects of this grand and truly cosmical scheme.

When the cable broke in the Atlantic Ocean, after 400 miles of it had been payed out, the American steam-ship *Niagara*, and its British consort, the *Agamemnon*, deposited the bulk of the cable at the Keyham yard, belonging to Government, at Devonport; and there it will remain till next year, experiments meantime being made with it by Mr. Whitehouse, the electrician, which may assist in solving several curious electrical problems. Even the 400 miles of it lying in the Atlantic are being well watched night and day, and may shed some interesting light on the subject of terrestrial electro-magnetic currents, and other cosmical electric and magnetic phenomena.

Next year's endeavour to lay the line will be made with 800 additional miles of cable, or 3,000 miles in all to meet emergencies, and the expedition, including the *Niagara*, which, meantime, is being altered interiorly at New York, will sail at an earlier period of the year than before—most likely at the end of June or beginning of July, so that in case of any hitch occurring there may be ample time to repair it, and still leave August open for another effort. The cable will, of course, be the same in kind—in fact, it will be essentially the same cable as before. The two portions of this cable, placed in the two war-ships, it may be remembered, were, unfortunately, it was said, covered with wire spun in contrary spirals, so that the one portion would tend to untwist the other. Were one portion to *twist* at all with the other, this would certainly be the result; but no mere straight pull in the line of the cable, such as it is alone very likely to be exposed to, can well act so as to *untwist* either portion. The danger of kinking or fouling is itself a sufficient reason for the careful avoidance of any twisting action in paying out. It is now proposed to join the two portions in mid-ocean as was at first contemplated, the *Niagara* then proceeding eastward, and the *Agamemnon* westward. The deep sea fishermen, it seems, recommended a different course from either this or the previous one, namely, from west to east entirely, that is from Newfoundland to Ireland, in order to take advantage of the set of the Gulf Stream eastwards, instead of the contrary course westwards; and although that stream does not dip lower than seventy fathoms while the cable is to be laid far below that depth, it must be remembered that in laying it, both the ships and the cable will have the stream to cope with in the first place.

The paying-out apparatus is to be improved, so as to guard against the strain on the cable, caused either by the sudden pitching of the ship, or by the action of the brake-apparatus. Considering the anticipated freedom from pitching in the *Great Eastern*, or *Leviathan*, would not such a ship be an invaluable, though, doubtless, a costly adjunct in the laying of the Atlantic telegraph cable? There would be a peculiar fitness in the association of two such grand results of nineteenth-century progress.

We hear nothing of any means being intended to be applied for the salvation or recovery of the cable, should it after all be again broken in the deep ocean. Surely there can be no great or insurmountable difficulty here. We should like to know what fatal objection could be made to either of the two suggestions we ourselves, for example, some time since made; namely—at intervals of a certain number of miles of the cable, as it run out, to affix a rope, attached to a buoy, so arranged as to float on the surface when the cable has reached the bottom, the rope being capable of lifting the end of the cable should it be broken. One or two only of these buoys and ropes might be requisite, if, as we also suggested, the cable were overrun by a ring attached to the rope; and in this case, indeed, those in the steamer or two required, under such circumstances, to follow in the wake of the ship containing the cable, would not need to lay down any buoy at all.

Many plans and suggestions for the safe deposit of the cable have been made since the attempt to lay it was temporarily frustrated by the untoward accident on board the *Niagara*, but on this subject we cannot here enter. We may, however, simply refer to a little tract "On Laying Telegraphic Cables in the Deep Sea," by a nautical and practical man, who appears to know what he is treating of,—namely, Master James Bodie, R.N.* who was appointed to the *Agamemnon* when that ship was first prepared for the reception of the Atlantic cable, and had an opportunity of minutely noting all the arrangements and appliances for its safe deposition then made on board the ship. Master Bodie considers that light as the cable was comparatively to others, still it was unnecessarily heavy, and hence the velocity and the perpendicularity with which it rushed out; and that were the core covered with hemp rope in place of wire rope, except on the coasts, where anchors might get foul of it, it would be sufficiently strong, and would bear much more lifting power, so as to be more easily recovered from the deep sea. Mr. Bodie's tract contains a table, showing at what rate specific gravities descend in the ocean, deduced by himself, experimentally, from deep sea soundings, and which cannot but be a most useful aid in the settlement of the question of the safe deposit of the Atlantic telegraph in the ocean depths.

Very considerable progress is being made in filling up the telegraphic gaps, as we may call them, between this country and its Indian empire. The greatest gap is still the stretch between Bombay, or at least Kurrachee, and Suez, at the head of the Red Sea. No telegraph has as yet been laid down, either in the Red or the Arabian Sea, and this is mainly, though not entirely, what prevents our Indian telegraphic news from reaching us in less than from three weeks to a month. Steamers have still to cross the Arabian Sea and the Red Sea; and, although there are other gaps to be filled up, these are already of minor importance as causes of delay. The shortest route, however, would be by the Euphrates and the Persian Gulf. Malta is about to become a distinguished point in Indian telegraphic communication through Sardinia; and the Austrian Government have agreed to the laying of a submarine line from Ragusa, on the Adriatic, forking out of the Corfu and Malta cable to Candia, and thence to Alexandria, with a view to the extension of the line to India *viâ* Alexandria, and the Red Sea or the Persian Gulf, to Kurrachee and Bombay, which would be brought within fifteen days of London by this Austrian adjunct alone; and, were either the Red Sea line or the Euphrates line laid down, of course the telegraph communication between London and India would be instantaneous.

As the question is often put to us, how is the telegram conveyed from India to England, why is it that it does not come to us instantaneously, and how is it that we are dependant on foreign telegraphs for its conveyance; let us repeat, or rather re-state in another form, that at present the Indian news, after steaming up the Red Sea from India, and crossing the isthmus of Suez, is made up by our consul at Alexandria on its arrival from Suez (no telegraph report being as yet sent across the isthmus, although we believe there is a partial line running from Cairo). The summary of the news so made up at Alexandria is forwarded to Malta, and thence (till the cable already made be laid down between Cagliari and Malta) by Government steamer to Cagliari. Handed in to the telegraph-office there, it is forwarded to Spezzia and thence to Turin. Thence there are two telegraphic routes, one *viâ* Switzerland, the Rhine provinces, Belgium, and through the submarine cable from Ostend to London; the other *viâ* France to Paris, and thence (through the submarine cable) from Calais to London. A third route may also be employed, viz. from the Rhine Provinces to Amsterdam, and thence, *viâ* the Electric and International Telegraph Company's submarine wires, from Holland to London.

A line has been proposed to connect Alexandria, Malta, and Gibraltar, with England direct, but in the present state of the money market any further great extension of long submarine lines is not at all probable. At present, therefore, as will be seen, in telegraphic communication England is quite dependent on continental powers.

As regards internal communication in India itself, we may add, there are already 5,000 miles of telegraph in the interior, and measures will be taken to insure uniformity of design and management throughout the whole range of line from Calcutta, Madras, and Bombay to Great Britain. In furtherance of this, a coast line between Calcutta and Madras is in vigorous prosecution.

* Harris, printer to her Majesty, Fore-street, Devonport.

## FIR, DEAL, AND HOUSE PAINTING.

AN ATTEMPT TO DETERMINE THE PERIODS IN ENGLAND WHEN THESE WERE FIRST INTRODUCED, WITH REMARKS ON THE PROCESSES OF THE LATTER.*

It has been generally supposed that the timber seen in old buildings is almost without exception oak; but it will be found on investigation, that many other kinds of wood were used, a knowledge of which, tested as they have thus been in trying positions, would be highly serviceable to the architect and to the builder. From records quoted in Mr. Turner's "Domestic Architecture of England,"† it appears that in 1253, temp. Henry III. the bailiffs of Southampton were commanded to buy 200 Norway boards of fir to be used at Winchester for wainscot; that in 1255, 1,000 Norway boards were purchased for wainscoting certain rooms in Windsor Castle, and that a house of deal was to be made, running on six wheels and roofed with lead. The word used, "*sapo* or *sappo*," has been translated "deal;" this latter is stated to be derived from the Dutch, *deelen*, or German, *dielen*, "firwood," which would perhaps be the better translation of the word "sapo."‡ Turner gives his opinion that "the wood ordinarily used was fir, possibly because it was cheaper and more easily worked than oak," and that "Norway planks were largely imported into this country from an early period of the thirteenth century, and perhaps, although it is not quite so clear, at a still earlier time." His authority for these remarks appears to me very slight; but he has in his favour the fact that treaties "for the benefit of trade" were made by Henry III. with one or two of the kings of Norway; the use of the timber, however, would appear (from these records) to have been confined to the royal works. Deal boards bought for doors and windows, are mentioned between 1272 and 1307. One of the halls appropriated for the royal seat at the coronation of Edward II. (1307), was ordered to be covered with boards "de sapo." The wardrobe accounts of Edward IV. (1480), mention cofyns of fyrre for the carriage of the king's books to Eltham.

The above extracts show that fir timber was imported at that early period; and omitting the last record, we must now pass over an interval of about 200 years to the next date, for the first statement I have been able to find of the actual importation of timber, which is as late as 1517, temp. Henry VIII. when the Dutch in particular were accused of bringing over iron, timber, and leather, ready manufactured. During that monarch's reign the scarcity of timber began to be experienced, and several statutes were passed for fixing the price of barrels; requiring the importation of clap-boards for their manufacture; and for the preservation of the forests of England, but excluding the counties where iron-works had been carried on from very ancient times. Queen Elizabeth (1558-1603) having reduced the forests still further, passed subsequent Acts for their preservation. Mr. Clayton, in his work on the ancient timber edifices of

* Read by Mr. Wyatt Papworth, at the Ordinary General Meeting of the Royal Institute of British Architects, on the 2nd inst, as already mentioned.

† The omission in this work of information as to the exact kind of wood used in the different buildings is the more to be regretted, as the author of the second volume states that he had visited every place he described.

‡ French, *sapin*.

the western part of England, states that the timber buildings of England (of this period, that of the sixteenth century) were invariably constructed of oak, of extreme durability; and Harrison (1573), the often quoted writer in the reign of Elizabeth, says,—"The wa'ls of our houses on the inner sides be either hanged with tapestrie, arras worke, or painted cloths—or els they are sceled with oke of our owne, or wainscot brought hither out of the East countries;" and in another place, "in times past, men were contented to dwell in houses buylded of sallow, willow, plum-tree, hard beame, and elme, so that the use of oake was in a manner dedicated unto churches, religious houses, princes' palaces, noblemen's lodgings and navigation; but now all these are rejected, and nothing but oke anie whit reguarded." It will be observed that deal is not mentioned for building purposes. During the last years of Elizabeth's reign, cottagers and farmers' houses were building in all directions, and in London the progress was likened to an inundation. Large quantities of timber were thus needed, as brick had not yet been adopted for general use.

Although without any historical record of the fact, it is to about this period (1558-1608), and to the abovenamed causes, that I should attribute the general introduction of foreign timber as an article of commerce; as in 1553 (1st of Mary) the English had discovered Archangel, and in 1560 commenced trading to Narva, then belonging to Sweden. The fitness of fir, besides other woods for building, is set forth by an English writer in 1586, seventeen years before the death of Elizabeth:—"Firr timber is meet for divers workes, and greatly esteemed for his height and bignesse, whereof are made the ship masts and pillars for houses, for it is very strong and able to abide great force. It is used also in building, for great gates and door-posts: in fine, good for any building within, but not so well enduring without doores, and very soon set a-fire. The firre, the poplar, the ash, and the elme are meet for the inner parts of the house, but they serve not so well in the weather as the oke doth. The best to bear weight is the fir and the larch, which, howsoever you lay them, will neither bend nor break, and never faile till wormes consume them. Ash for thin borde; the best to clean, the firre, the poplar, and the beech." In or about 1603, Sir Walter Raleigh presented to James I. some observations on trade and commerce, showing how the Dutch had engrossed the transport of the produce of other countries, and stating that "the exceeding groves of woods were in the East Kingdoms, but the huge piles of wainscot, clapboad, fir, deal, masts, and timber, is in the Low Countries, where none grow, wherewith they served themselves and other parts, and this kingdom, with those commodities." From other accounts it appears that for about seventy years a very considerable trade had been carried on with Russia—Archangel, it will be remembered, was discovered by the English in 1553), and that down to about the year 1590 a large number of ships sailed annually to that country; but in 1600 only four had been sent out, and in 1602 only two or three; whereas the Russian trade of the Dutch employed from thirty to forty ships each as large as two of the English, and all chiefly laden with English goods. Though the above shows the extent of the trading, yet a pamphlet, published about fifty years later, in 1662, whilst describing the produce of Russia, mentions oak as the only timber exported. By the year 1638 Germany, Prussia, and Norway, all sent timber and deal boards. In 1662, Charles II. interdicted the importation from the Netherlands and Germany of deal boards, fir, timber, and other articles, upon any pretence whatever.

Besides a panel, to which I shall refer presently, the date of which is somewhat uncertain, the earliest instance of the actual use of deal I have been able to find, is in the description of Wimbledon Hall, erected in 1538 by Sir Thomas Cecil. This building became about 1640, the property of Queen Henrietta Maria, and was surveyed by order of the Parliament, in 1649. The accounts do not state whether any repairs were made in the sixty years between the date of its erection and the survey. If the deal, therefore, which was introduced so largely in the floor boards and wainscoting was not in the original erection, we must infer that the house was put into repair or modernised near the middle of the seventeenth century, when it was prepared for the queen; I am in favour of the deal having been used in the original erection.

The account of Wimbledon Hall extends over fifty pages of the Archæologia, and describes how each room was paved, lighted, and ceiled; whether wainscoted, coloured, or plastered; what fixtures remained therein; concluding with the state and extent of the gardens and buildings, the park, and erections belonging to the estate. The use of deal for floor boards, wainscoting, wall linings, presses, &c. frequently occurs in the account, which time will not permit me to give at length. In the basement was a dry larder, having a press of deal wainscot. Among the exterior buildings a pheasant garden is described, severed from the park by a pale of deal boards, 10 feet high. The land of Richmond Palace is likewise described as part fenced with brick, and part with deal boards.

Another early instance may be obtained by inference, in Brandenburgh House, Hammersmith, erected about the beginning of Charles I.'s reign (say 1625), by Sir Nicholas Crisp, the materials of which were sold by auction in 1822, *the dry rot* having got into the timbers (Falkener's Hammersmith, edit. 1839). Sir Bulstrode Whitelocke, ambassador to Sweden in the time of Cromwell, on his return in 1654, brought a cargo of deal boards, which he mentions in his journal to have been used at Fawley Court for new flooring his hall, and for wainscoting it.

Respecting the asserted practice of "painting" during the thirteenth century, Turner says a few instances do occur of directions to paint the woodwork, but in a note he adds that the chapel built by Henry III. (1216-72) at Windsor, had a wooden roof formed and coloured to imitate one of stone at Lichfield, and that wooden and stone posts or piers and arches were painted marble colour, as were those of the halls of Guildford and Ludgershall. During this century, the ordinary custom was to decorate in paint or colour the wainscoting with patterns or subjects taken from sacred or profane history. Green was the favourite colour, very frequently starred with gold, with borders of a different pattern, male and female heads, &c. This wainscoting being generally only 5 feet or 6 feet high, the wall or plaster above it was painted in fresco or in water, to represent some history, or a curtain. The Queen's chamber, at the Tower, was to have the walls whitewashed and pointed, and within those pointings painted flowers; the next year the same chamber was to be thoroughly whitened internally and newly painted with roses; also the King's own chamber was to be entirely whitewashed. But this was not confined to internal work, for in the following year the king directs that water-pipes should be put up to the great tower, so that the walls of the said tower, which has been newly whitewashed, might be in nowise injured by the dropping of rain water, nor be easily weakened. Even the chapel of St. Catherine, in Nottingham Castle, was to be whitewashed on every side, and pointed lineally: directions are also given to whitewash within and without the King's chapel, the Queen's chapel and chamber, and the Queen's great wardrobe, all at Guildford, where the hall also was whitewashed. Whitewashing would appear to have been then almost a royal luxury; though not wholly so, for evidence is found that during the thirteenth and fourteenth centuries the citizens of London not only whitewashed their walls, but were compelled by the magistrates to do the same to the thatch of the roofing, as a precaution against fire. White lead and oil, with fine and inferior varnishes, were also extensively employed in this period for the decorations. Turner, in support of external painting, states that the habitable buildings being of timber, it would require painting in some way to be preserved from the weather, for although park palings will stand for almost any length of time, yet carved woodwork, and even plain timber when mixed with plaster, require painting. He appears to have formed this opinion upon the present mode in Lancashire and Cheshire, of painting (colouring?) the timbers black and the interstices white. Clayton says, "it would seem probable, from the appearance of the timbers in many of these buildings (the town-halls of the sixteenth century) that their surfaces were originally protected by a description of paint, of a rich brown colour; it is, however, extremely uncertain whether the practice of blackening them, as usually done in the present day, can be traced to ancient origin. The following extract from a record, dated 1574, will remove any doubt on the point. The plastering and whitening the forefront of my Mr. his house in Coleman-street, and the courte, with the blacking of the timber work, 42s. 6d."

The extensive employment of tapestry in the fourteenth and fifteenth centuries would appear to have allowed the whitewasher to rest, except for the ceilings, which were "white lined," as usual; a few walls, however, were white lined even in Elizabeth's reign; but then they were decorated with poesies and moral proverbs on fantastic labels, of which Luckingfield furnishes so profuse an example. At Hardwick Hall, 1750, the walls of the state room are divided at about half the height by a stringing, the upper part filled with landscapes, figures and animals relieved in plaster, and painted "all proper" on a white ground; the lower division hung with tapestry, and the oak panels of the wainscot of one of the rooms are all marked in gold with the Stafford knot, the cognizance of that family. The survey already mentioned of Wimbledon Hall in 1649, states that the oak wainscot was varnished green, with gold stars, crosses, &c.; or coloured with "livor color" and varnished; or varnished white, filleted with green; and it is interesting to notice that from the absence of all description to the contrary, the deal so much employed may be supposed to have been left plain. The "knotts" in the garden "are compassed about on three sides thereof with very handsome rails, piked with spired posts, in every corner and angle, all of wood, varnished with white, which very much adorns and set forth the garden." Oil painting is thus not noticed.

As an illustration of the use of deal in the reign of Elizabeth, and also of this mode of decoration, Mr. Reynolds Rowe, of Cambridge, has forwarded a panel of fir: it originally had a ground-work of vermillion, in the centre of which was a pattern laid on in gold of a good thickness. This panel had formerly belonged to Swansey Manor House, in Cambridgeshire, *temp.* Elizabeth, which still contains some of the same kind of work, probably under the coat of white paint of a later period.

In connection with this period reference may be made to a small octavo volume, by Stephen Primatt, published in 1667, the year following the Fire of London, and evidently intended as a guide to builders. Describing the finishing of the various classes of houses illustrated; he specifies that the walls of each floor are to be "plastered and sized;" the partitions to be "lath, plaster and rendered and sized." Painter's work is described "for a fair stone colour laid in oil for windows, doors, rails and banisters for staircases, shop-windows and modillions is worth 12d. per yard, being coloured over thrice. For a timber colour in oil, over doors and windows, 9d. per yard. For a door painted on one side with a stone colour, 12d. a yard, and for a light of a window, 6d.; for a lead colour in oil, 9d. or 10d. a yard. Painter's work of ordinary lights of windows in oil, at 6d. per yard, or 3d per light. For painting the best cerulean or blue colour in oil, 1s. 6d. per yard:" this is the only expensive colour mentioned, and seems to indicate the original paint for metal-work. "Whitewashing with size" is given as worth 2d. per yard.

In 1671 it was agreed that the wainscot in the Hall of the Carpenters' Company should "be handsomely painted, and the walls above the wainscot on the south side hung with painted cloth of some neat painting-work suitable to the front side." A French traveller in England in 1672, remarks that "the houses of Canterbury are well built and painted after the Dutch fashion." For many years after 1700, the following description from a work of the period will convey some idea of the extent of painting practised. "Out-door painting for doors, shop-windows, window-frames, pediments, architraves, friezes, and cornices, and all other timber-work exposed to the weather, ought at first setting up to be primed with Spanish brown, Spanish white, and red lead (about a fifth part) to make the other two colours dry, ground in linseed oil: then again with the same colour, only whiter, and, lastly, with fair white made of lead, and about a fifth part in quantity (not weight) of Spanish white. "Wainscot colour," "white colour," and "walnut colour" are enumerated; also "ordinary branched painting" and "plain japan, either black or white." On considering this recital of painter's work I have thought that these, wainscot and walnut colours, were used for the purpose of making woodwork resemble those woods. An interesting account has lately been published of a lady of rank, who, in 1612 or 1613 appears to have entirely changed the fashion of the arrangements of houses in France, and to have been the first who painted rooms in any other colour than red or tawny. The next and last item in the description is "whiting and colouring on plasterer's work." Here I would request your attention to the continued use of "colour" (distemper) for interior work, down to such a late period (1700), a fact which I conceive at once accounts for the extensive use made of it in our churches. It is clear that from about 1700, oil paint became a disguiser of materials, and we know from his own description that the interior of St. Paul's Cathedral was painted under Sir Christopher Wren's direction. In a work of 1703, the contrivance of closets in most rooms, and painted wainscot are mentioned as two great improvements. Perhaps the first intimation of oil paint being used to a large extent *internally*, is in a "Compendium" of 1721. It states that the taking of the dimensions for painters' works within doors, is the same with that of the joiners, by girtings about the mouldings and members of cornices, &c.; but the painter never requires work and half work as the joiners do, but reckons his work once, twice, or thrice primed or coloured over. Wood, in his history of Bath, says "that about 1727, if the walls of any of the rooms were covered with wainscot, it was with such as was mean and never painted:" as the new buildings advanced, the rooms were all wainscoted and painted in a costly and handsome manner.

Ware, in 1767, writes that "fir, as it is cheap and works easy, since the use of paint has become so frequent, has in a manner superseded all other kinds." In the descriptions of buildings given at the end of his work, he specifies that the walls are to be rendered

and fronted for hangings, and paints all the wainscoted rooms a "common or stone colour" three times in oil. In 1775 a large mansion in the country is stated to have paper to the ground-floor rooms, whilst the walls of the bed-rooms, garrets, and basement were lime-whited. And at the beginning of the present century, says a later writer, the houses of traders and middle-classes, particularly in the provinces, were chiefly adorned with simple washings of rose pink, whitening, and size. A friend, now in his eighty-fifth year, remembers the lining to walls being left unpainted, and much of the woodwork even in the rooms connected with the Houses of Parliament were also of plain deal. The plastered walls of houses were coloured, the sashes painted white, the doors, skirtings, and other parts generally black. Several present can no doubt recall many houses in the country still exhibiting this ancient style of ornamentation. Thus we may conclude that house painting, or, as it has been very descriptively termed, the "three coats and flat work," did not come into fashion until about the period of William and Mary and Anne, up to which time either colouring by distemper or by whitewash had been in vogue for plasterwork, leaving inside woodwork more or less untouched.*

## CLOCKS AND LOCKS.

Under the title of "Clocks and Locks," Mr. Denison has issued a little book, the first part of which is a new and enlarged edition of a reprint from the eighth edition of the *Encyclopædia Britannica*, and a kind of third edition of one of Weale's series of Treatises; and the second part is also a reprint from the *Encyclopædia*, and was noticed by us some time since, when it appeared in the form of a lecture by Mr. Denison. Much of the first part is occupied with the author's history of the great Westminster clock, of which he was the designer, and with an account of his own improvements in clocks.† The treatise contains some very useful information and guidance as to church and turret clocks and dials. We may quote a few of his remarks on the form of dials:—

"The established form of dial for turret clocks is a sheet of copper made convex, to preserve its shape; and this is just the worst form which human ingenuity could have contrived for it. For, in the first place, the minute-hand, being necessarily outside of the hour hand, is thrown still farther off the minutes to which it has to point by the convexity of the dial; and consequently, when it is in any position except nearly vertical, it is impossible to see accurately where it is pointing; and if it is bent enough to avoid this effect of *parallax*, it looks very ill. Secondly, a convex dial at a considerable height from the ground looks even more convex than it really is, because the lines of sight from the middle and the top of the dial make a smaller angle with the eye than the lines from the middle and the bottom, in proportion to the degree of convexity. Obvious as is the remedy for these defects, by simply making the dial concave instead of convex, it has, we believe, never been adopted until Mr. Dent introduced this improvement also, at Mr. Denison's suggestion, in some clocks for the Great Northern Railway, at Doncaster, and on the platform at the King's-cross station. As convex dials look more curved than they are, these look less curved than they are, and, in fact, might easily be taken for flat ones, though the curvature is exactly the same as usual. Old convex dials are easily altered to concave, and the improvement is very striking where it has been done. There is no reason why the same form should not be adopted in stone, cement, slate, or cast iron, in which materials dials are sometimes, and properly enough, made with the middle part countersunk for the hour hand, so that the minute-hand may go close to the figures and avoid parallax. When dials are large, copper, or even iron or slate, is quite a useless expense, if the stonework is moderately smooth, as most kinds of stone take and retain paint very well, and the gilding will stand upon it better than it often does on copper or iron. The figures are generally made much too large. People have a pattern-dial painted; and if the figures are not as long as one-third of the radius, and therefore occupying, with the minutes, about two-thirds of the whole area of the dial, they fancy they are not large enough to be read at a distance; whereas the fact is, the more the dial is occupied by the figures, the less distinct they are, and the more difficult it is to distinguish the position of the hands, which is what people really want to see, and not to read the figures, which might very well be replaced by twelve large spots. There is a clock with a dial of this kind in the London Athenæum; and though it is constantly referred to as a regulator of watches, nobody has ever complained of the want of figures, which, after all, do not mean what they say, as you read 'twenty minutes to' something, when the minute-hand points to VIII.* The rule which has been adopted, after various experiments, as the best for the proportions of the dial, is this:—Divide the radius into three, and leave the inner two-thirds clear and flat, and of some colour forming a strong contrast to the colour of the hands, black or dark blue if they are gilt, and white if they are black. The figures should occupy the next two-thirds of the remaining third, and the minutes be set in the remainder, near the edge, and with every fifth minute more strongly marked than the rest; and there should *not* be a rim round the dial, as there generally is, of the same colour or gilding as the figures. The worst kind of dial of all are the things called skeleton dials, which either have no middle except the stonework, forming no contrast to the hands (to which state the authorities of Trinity College, Cambridge, have lately altered their well-known double-striking clock, put up by the famous Dr. Bentley, striking, as it used to be said, once for Trinity and once for his former college, St. John's, which had no clock), or else taking special trouble to perplex the spectator by filling up the middle with radiating bars. Where a dial cannot be put without interfering with the architecture, it is much better to have none, as is the case in many cathedrals and large churches, leaving the information to be given by the striking of the hours and quarters. This also will save something, perhaps a good deal, in the size and cost of the clock; and if it is one without a train remontoire or gravity escapement, will enable it to go better. The size of public dials is often very inadequate to their height and the distance at which they are intended to be seen. They ought to be at least 1 foot in diameter, for every 10 feet of height above the ground, and in many cases more, whenever the dial will be seen far off; and this rule ought to be enforced on architects, as they are often not aware of it till too late, and indeed seldom make proper provisions for the clock or the weights in building a tower."

As to lighting them, he says:—

"The art of illuminating dials cannot be said to be in a satisfactory state. Where there happens to be, as there seldom is, a projecting roof at some little distance below the dial, it may be illuminated by reflection, like that at the Horse Guards—about the only merit which that superstitiously-venerated and bad clock has; and perhaps the same thing might be done by movable lamp reflectors, like those put before shop windows at night, to be turned back against the wall during the day; but such an arrangement would be expensive in working and attendance, even if it could be conveniently arranged. It has also been proposed to sink the dial within the wall, and illuminate it by jets of gas pointing inwards from a kind of projecting rim, like what is called in church windows a 'hood-moulding,' carried all round. But it is a great objection to sunk dials, even of less depth than would be required here, that they do not receive light enough by day, and do not get their faces washed with the rain. The common mode of illumination is by making the dials either entirely, or all except the figures and minutes and a ring to carry them, of glass, either ground or lined in the inside with linen (paint loses its colour from the gas). The gas is kept always alight, but the clock is made to turn it nearly off and full on at the proper times, by a twenty-four-hour wheel, with pins set in it by hand as the length of the day varies. Self-acting apparatus has been applied, but it is somewhat complicated, and an unnecessary expense. But these dials always look very ill by day; and it seems often to be forgotten that dials are wanted much more by day than by night; and also, that the annual expense of lighting three or four dials far exceeds the interest of the entire cost of any ordinary clock. White opaque glass with black figures has lately been introduced, and it is very superior to the common method. It is used in the great Westminster clock dials. It is somewhat of an objection to illuminating large dials from the inside, that it makes it impossible to counterpoise the hands outside, except with very short and therefore very heavy counterpoises. And if hands are only counterpoised inside, there is no counterpoise at all to the force of the wind, which is then constantly tending to loosen them on the arbor, and that tendency is aggravated by the hand itself pressing on the arbor one way as it ascends, and the other as it descends; and if a large hand once gets in the smallest degree loose, it becomes rapidly worse by the constant shaking. It is mentioned in Reid's book, that the minute-hand of St. Paul's cathedral, which is above 8 feet long, used to fall over above a minute as it passed from the left to the right side of XII, before it was counterpoised outside. In the conditions to be followed in the Westminster clock it was expressly required that 'the hands be counterpoised externally, for wind as well as weight.' The long hand should be straight and plain, to distinguish it as much as possible from the hour hand, which should end in a 'heart' or swell. Many clockmakers and architects, on the contrary, seem to aim at making the hands as like each other as they can; and it is not uncommon to see even the counterpoises gilt, probably with the same object of producing apparent symmetry and real confusion."

In respect to the Westminster clock, Mr. Denison states that the final estimate of Mr. Dent for its construction was 1,800*l*. The weight of the great bell was increased from fourteen to sixteen tons by an accidental deviation of the founders from Mr. Denison's design, and the composition of the metal, as prescribed by him, was somewhat different from what was usual, containing 7 of tin to 22 of copper, instead of 1 of tin to 4 of copper. The density and strength of the metal were thus greater than of any known bell metal, and the bell altogether more powerful than had been expected by any body. Consequently, all previous calculations as to the proper weight of the hammer had turned out wrong. The bell went on increasing in sound as the hammer was increased, up to 12 cwt. or about 1-28th of the weight of the bell. Mr. Vulliamy had assumed that the weight of the hammer ought to be from the 200th to the 160th part of the bell's weight, and Mr Denison himself assumed 4 to 5 cwt. or about 1-60th of the bell's weight, to be the proper proportion. In respect to the striking of the hours and quarters, Mr. Denison says,—

"It should be understood by the public that the first, second, and third quarters begin to strike at the right time, but the fourth quarter begins half a minute before the right time, to get out of the way of the hours, and act as a warning to people to get out their watches for the first blow of the hour, which is intended to be always exact within a second of Greenwich time."

The Londoners are not destined to astonish country cousins with the 7-inch jumps of the long hand, Mr. Denison considering it not safe to let such heavy hands so move. The clock is to wind itself up by hydraulic power, applied from a cistern, on the hydraulic crane principle, but capable of being set aside and substituted by hand power, if out of order. The striking part only is to be wound up by water on this self-acting principle.

In a postscript to part first, Mr. Denison, in his trenchant style, makes a somewhat serious onslaught upon Mr. Cole, of the Government Department of Science and Art, as to the procurement of a clock for the Brompton Museum. First of all, the author states, Mr. Cole appeared desirous that Mr. Dent should make one as a model of the great Westminster clock, and regardless of cost; but soon after, he continues, it was suggested to Mr. Dent by Mr. Cole that "it might be worth his while to put up a clock at that place at a low price, *for the sake of the advertisement*;" and, if he would not, there was somebody else who would." Mr. Dent declined to do business on such terms, and accordingly Mr. Cole, it is added, ordered the clock of another maker, of whom it is said that he was not even among the fifty-one makers rewarded or publicly mentioned by the Exhibition jury of 1851; "though, indeed, it was proposed, in joke, to give him a special medal for his clocks—not on account of their goodness." The remarks which follow do not seem justified, even by the statements on which they are based.

In regard to the 2nd part of Mr. Denison's volume, we have already, as remarked, given the substance; and we shall therefore confine ourselves mainly to some additional matter not contained in the lecture therein quoted.

In speaking of certain American locks, the author says,—

The casting of both these American locks—which have all their heavy parts of cast iron,—is vastly superior to any iron casting we have ever seen made in England; and on the whole, the United States are evidently far ahead of us in the manufacture of both good and cheap locks; and all because our people are too stupid to substitute machinery for hand-work, and because (as Mr. Hobbs said in the discussion at the Society of Arts, on the establishment lately set up by the Government for the manufacture of arms at Woolwich), "if the English workmen can do anything to make a machine go wrong, they will; whereas, in America, they will do all they can to help it." In the same way the American and French manufacturers of clocks have driven our makers both of common clocks and of ornamental clocks out of our own market; and any enterprising manufacturer might very soon finish the business by making both church and house clocks at half the price which is paid for the old-fashioned hand-work of Clerkenwell, and of far better quality.

* To be continued.

† Clocks and Locks. From the *Encyclopædia Britannica*. Second Edition. With a full account of the Great Clock at Westminster. By Edmund Beckett Denison, M.A. Q.C. Edinburgh: Adam and Charles Black. 1857.

* In a street near the *Builder* office there is a clock outside a hatter's shop with the figure of a hat merely at each of the usual figure-points, yet the time is indicated as clearly as usual.

It is necessary, Mr. Denison justly remarks, to caution the public against *shop-window* locks in general, unless it be known or evident that those sold at a moderate price within are the same,—which, we dare say, it may be pretty decisively added, they seldom or never are.

Since 1851, says the author, Mr. Chubb and some other makers of tumbler locks, have adopted false notches in all their best locks, together with revolving "curtains," and these provisions, he adds, "undoubtedly make the locks much more difficult to pick; in fact, so difficult, and requiring such nicety of instruments and manipulation, that they may be considered practically safe, except under extraordinary circumstances. But then it must be remembered that all the great robberies, of which there are several every year, do present extraordinary circumstances, and that they are never attempted except where the temptation has been made great, by the thieves seeing that they had unexpected facilities offered them. It is, therefore, by no means safe to assume that a lock will never be picked, merely because it would take a first-rate hand a long time to do it. The process need not be continuous. A good hand will do part of his work, and measure it, or mark it off upon his false key one day, and more another, until it is all done, and his key ready for action at the first convenient opportunity. Recent experience has shown that your own officers, clerks, and servants, are the people from whom you have most to apprehend, and they are just the people who have the most time and opportunity to perform their key-making operations undisturbed."

As to the revolving curtains here alluded to, we may remark, that if all of them be as liable to go wrong, even in spite of being directly under the maker's eye, as one or two of which we have had some experience, they must be a general nuisance. In the cases referred to the revolving curtain was apt, from the mere shutting of the house-door on which it was placed, to be shaken aside or out of position, sufficiently to prevent even the true key from getting into the lock till picked at by the end of a pencil, or some other implement with a sharpish point. Bad construction, however, may be the cause of annoyance in such instances.

Almost the only lock (besides his own unpatented one) of which Mr. Denison may be said to speak in anything like strong terms of its general merits, as a cheap and good lock for common use, is one patented since the publication of his article in the "Encyclopædia Britannica." He calls it "Tucker's last patent," and speaks of several forms of Tucker's new inventions, besides the ordinary door-lock,—such as the latch or spring door-lock, and the desk, sliding door, or piano-lock,—of all of which he says, "these are decidedly the best cheap locks of any that have yet been brought out."

As we before observed, while treating of locks and keys, the majority of the locks used in our ordinary dwelling-houses are of the most trumpery description, being usually out of order within the first six months; so that a good serviceable lock is still much wanted; but if buyers of houses and their occupiers would only resolve not to put up with such locks as are still too often used, and prove a constant source of annoyance and expense, we might surely now hope to see, in this respect, a speedy and complete reform.

## THE BURIAL BOARD OF ST. MARYLEBONE AND THE CONTRACTORS.

It will be remembered, that after the completion of the Marylebone Cemetery at Finchley, the works were found to be defective in a remarkable manner, and that certain allegations were made, both against the contractors and the architects. An action was brought against the contractors' sureties, Messrs. Thos. Culverhouse, John Nicholson, and John Culverhouse, who, in turn, brought an action against the Board. Ultimately, all the matters in dispute were referred to the arbitrament of Mr. T. D. Archibald, barrister-at-law. Mr. Archibald has recently made his award, and has assessed the damages sustained by the Board at 1,827*l.* which Messrs. Culverhouse and Nicholson are to pay, together with all costs of the reference. For the counter action, it was decided that they had no grounds, and they were to pay all costs of the reference in that respect also.

At a stormy adjourned meeting of ratepayers, held on the 2nd inst. to consider this award, called originally with the view of relieving the sureties to some extent, some extracts from the evidence of witnesses examined before the arbitrator were read by Mr. Gliddon, and, for the sake of warning, must not pass unnoticed:—

J. Brown, foreman to the contractors, said: The chief contractor told me to take up the 9-inch pipes (contracted for) which I had laid down, and put 6-inch pipes down instead. The clerk of the works was not there, he was gone to dinner, and I took them up immediately. My business was to lay down pipes. The master told me on several occasions that I put them too closely in the sockets. I was not to put them close into the sockets nor to connect them, as he said it would take more pipes to put them into the sockets. In 5-feet paths I had an order to fill up the ground without putting any pipes in. Master told me to open the ground, fill it up again, and ram it down. There were no pipes there at all. Master told me he would have it done so, and I should have my money—that he was my master and his partner's too. His partner was in the country, and the master said he was going to take the clerk of the works away, and that I knew what I was about. He told me to fill up some trenches that were open, and that I should be paid all the same. I said, "We shall all get transported, and I should never get another job if this were found out." I was told to take the men out of the sand-pit if I saw any of the commissioners coming, and I did so. He said if any gentlemen came in committee, and I saw a hat waving, I was to take the men out of the sand-pit. I understood that if it was known the sand was got on the ground the contractors would lose 200*l.* or 300*l.* I received orders from the master to give a ticket to men who brought the gravel, and I had to give an account to the clerk of the works of what came in and what was used, and I was forced to put more down than came in.

Charles Robinson, a workman: I recollect having conversation with the chief contractor. He said to me and Satherthwaite, "Now there is no one by you, you don t want any mortar, put the bricks in dry." Two 12-feet lengths were done in that way. It was done so by both of us. We said it was not proper to do so, and he said he was master.

Thomas Chapman, another workman: The contractor said (in the middle of the day), "You stop after all the men are gone." I was to fill in the ground without pipes. He said 4-inch pipes were to be put in here, and told me to fill it up without them. He said "The architect is coming to-day;" and I said "I don't know him." He said "I shall be with him, and when he comes I will wave my hat. You put one or two pipes in and a few bushes, and then leave them, and when he is gone take them up again." He said when any one was coming with a black suit on I was to lay glazed pipes in the trench, and when they were gone I took the pipes out and put the bushes in instead.

It was contended by some, that the contractors having been paid on the certificate of the architects, the sureties ought to have been considered relieved from responsibility. One of the speakers, Mr. Tripp, who maintained that the architects were liable to the Board, in giving what he considered analogous cases, said, with respect to the new cemetery for Paddington, that the drainage of that ground was found, after the works were completed, to be much in the same state as the cemetery of Marylebone, and the architect, a highly respectable man, and a parishioner of that parish, had at once admitted his responsibility, and he had had the works perfected at a cost to himself of 700*l.*

After various motions, it was resolved, amidst great confusion,—"That as any remission of the amount the sureties are bound for would affect the interests of the ratepayers at large, as well as the efficiency of good local government, this meeting is of opinion that it will be necessary to take the sense of the ratepayers at large by calling a public meeting."

## THE CRYSTAL PALACE.

### DR. JOHNSON.

Admirers of Johnson and our antiquarian readers will be gratified to know that the Johnson relics, from Inner Temple-lane, which were sold a few weeks since as old materials, at, in fact, a nominal price (we believe under 20*l.*), have been secured for the Crystal Palace Company, and are now, after being carefully marked under the inspection of an experienced architect, housed in the north wing of the building, ready for re-erection in the grounds of the palace. It is understood that the Honourable the Benchers of the society will present to the company the carved hood from the doorway, and the staircase which in the first instance they reserved from the sale. Fitted up with photographs of the building in its last condition, original or photographic portraits from Sir Joshua Reynolds's numerous paintings of Johnson's associates and contemporaries, autographs of himself and other men of eminence of the age, and other relics, it will form a nucleus for a highly interesting record of the last century, and its great men in art and literature.

We trust, therefore, ere long, to witness an erection, with its adjuncts, which, even in our own age and certainly in the eyes of posterity, will stand, perhaps, only second in interest (diminished to some extent, of course, by its changed locality) to Shakspeare's house at Stratford-upon-Avon, now the property of the nation.

## THE NEW DOM OF BERLIN.

The recent malady of the king has caused some delay in the progress of this great work; however, it is now proceeding again. It will be erected close to the Stadt-Schloss, over the residence of Frederick the Great. M. Heydt, the Minister of Finance, has been entrusted with the chief leadership of the building. The foundations of the choir are laid in the bed of the river Spree. An especial arrangement is made for the convenience of Cornelius: as his age does not admit of delay, the arrangements are so managed that M. de Cornelius will be able to paint in the crypt, undisturbed by the construction of the building being proceeded with above him.

## DESIGNS FOR RESIDENCES IN THE UNITED STATES.

We mentioned not long ago the appearance of a useful volume, by Mr. Calvert Vaux, containing designs for villas and cottages, prepared for execution, and many of them executed, in the United States,* and we now return to the volume according to promise, in order to give a fuller notion of its contents, and to repeat that it deserves a sale as well in this country as in America. The book contains 300 wood engravings of views, plans, and details, and some very sensible letter-press. Mr. Vaux, who will be remembered by many of our London readers, when he went to America became the partner of Mr. Downing, whose useful career was brought to a close by the burning of the *Henry Clay* steamer. "*Il bello e il buono*," the motto on Mr. Downing's seal, was also the pursuit of his life. Some of the designs in the book were produced under their joint supervision, while some few belong to a time when Mr. F. C. Withers was in partnership with the author. The value of art in building, Mr. Vaux says, is but beginning to be recognized in America:—

"A very transient visit into any part of the country shows that most of the villas and cottages are erected without regard to artistic propriety, and at considerable loss to their owners, from the useless outlay incurred by adopting ill-considered plans; and the subject, as well as the majority of the houses, would be improved by a little more ventilation. Square boxes, small and large, are springing up in every direction, constructed without any attempt at proportion, or the slightest apparent desire to make them agreeable objects in the landscape. These tell their tale simply and unceremoniously: they are the natural result of the migratory, independent spirit pervading the industrious classes in America, and offer interesting evidences of the genuine prosperity of the country, for they show not only that the landlord and tenant system is disliked, but that almost every storekeeper and mechanic can contrive, even when quite young, to buy his own lot and live in his own house. On the other hand, however, they demonstrate that the capacity for enjoyment, and the appreciation of what is really desirable in life, that should naturally accompany this active and successful industry, are wanting. Each of these bare, bald, white tubes tells its monotonous story of a youth passed with little or no cultivation of the higher natural perceptions, and of a system of education in which the study of the beautiful in its most simple elements is neglected and apparently despised. The lack of taste perceptible all over the country in small buildings is a decided bar to healthy enjoyments: it is a weakness that affects the whole bone and muscle of the body politic; and it is a needless inconsistency, for a full exercise of freedom of speech and action should naturally result in a full, free exercise of the innocent enjoyment that unfettered industry renders possible, and a refined propriety, and simple, inexpensive grace ought habitually to be the distinctive marks of every habitation in which a free American dwells."

Fig. 1 is a Suburban Villa executed some years ago in Georgetown, Dist. Col. for Mr. R. P. Dodge. The plan of the principal floor shows a porch that occupies the lower story of a tower, and forms a continuation to the veranda on the principal front. The main hall, lighted from this porch, is of liberal dimensions, and leads to a drawing-room that is provided with windows opening on to the front veranda, and with a handsome bay at the farther end. There is also a means of access from this room to a more retired piazza, or ombra, on the other side of the house. The dining-room, which communicates with the ombra, is, as shown, entered from this parlour as well as from the outer hall, and has a large pantry, or service-room, attached. The house cost about 15,000 dollars, but might be carried out in a plainer way for 10,000.

Fig. 2 is a villa of brick and stone, intended to be erected near Poughkeepsie, and is estimated, simply finished, at 16 000 dollars. The house is approached through a porch connecting two verandas, see Fig. 3, thus affording a lengthened covered promenade. The veranda, we may here observe, appears to be an essential feature in these residences. The hall would be used as a cool morning-room in summer.

Figs. 4 and 5 illustrate a villa "with wings and attics," about to be executed for Mr. Thos. Earle, of Worcester, Mass. and is estimated at about 16,000 dollars. The principal rooms communicate with each other, and with the hall.

Figs. 6 and 7 set forth a Marine Villa, which has been erected at Newport, Rhode Island, for Mr. D. Parish. It is built of brick and brown stone, and the contract was taken at something under 20,000 dollars.

Mr. Vaux has erected a country house for Mr. N. P. Willis, at Idlewild. He has evidently built for *himself* a good reputation.†

* "Villas and Cottages." By Calvert Vaux. New York: Harper. London: Sampson Low, and Co. Ludgate-hill. 1857.

† Let us add, as showing the course pursued in New York, that the author's card, printed at the end of the book, states his terms to be:—

"2½ per cent. for plans and specification,
1 " detail drawings,
1½ " superintendence.
—
5 per cent. usual commission of architects."

VILLA RESIDENCES IN THE UNITED STATES.—Mr. Calvert Vaux, Architect.

Fig. 1.

Fig. 3.

Fig. 2.

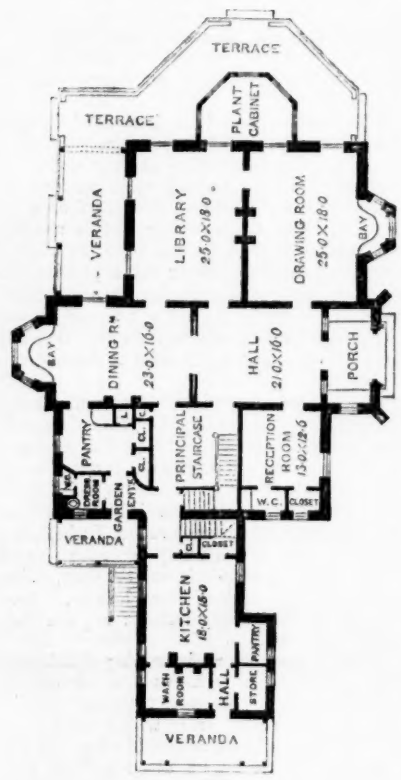



Fig. 5.

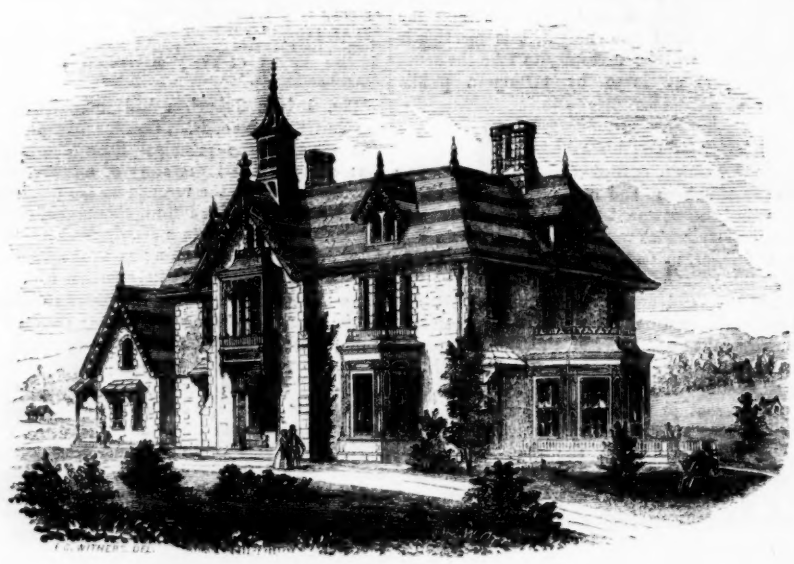
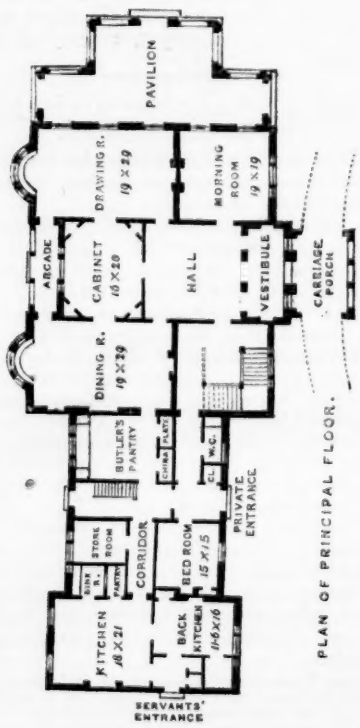


Fig. 4.



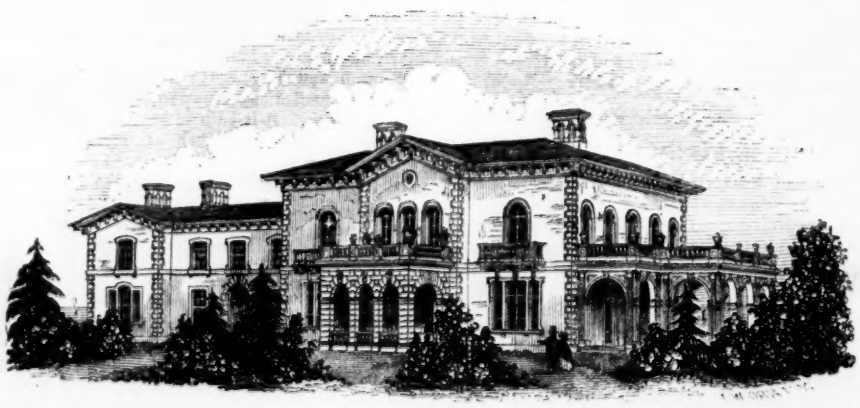
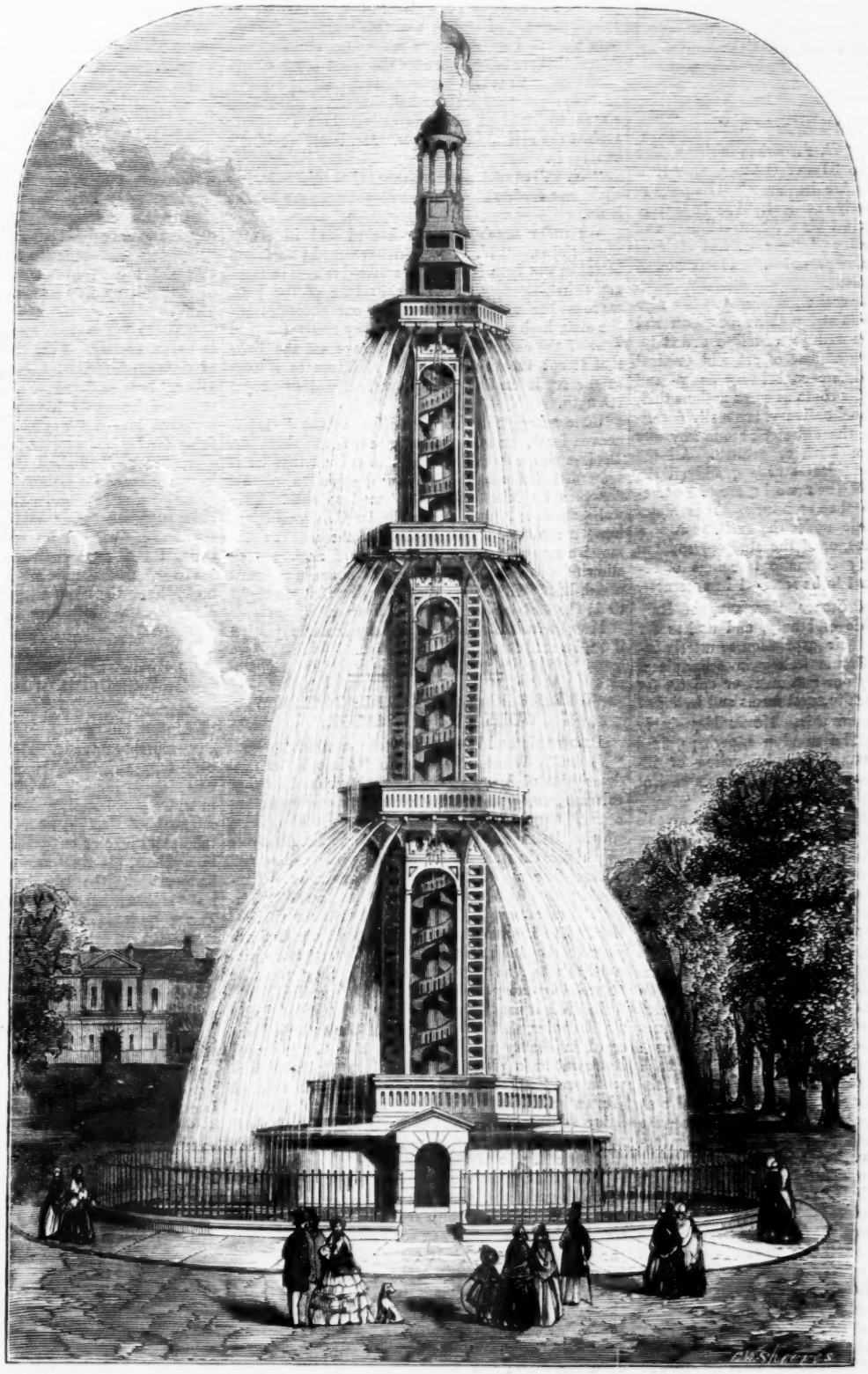



Fig. 6.

Fig. 7.



THE ARTESIAN FOUNTAIN AT GRENELLE, PARIS.——M. Ivon, Engineer.

## THE ARTESIAN WELL AT GRENELLE, PARIS.

In the year 1833, M. Mulot was charged, by the Municipal Council of the City of Paris, with the boring of an artesian well upon the left bank of the Seine, on the Place Breteuil, a vast space of ground extending in front of the Abattoir de Grenelle, not far from the Hôtel des Invalides.

The workmen commenced on the 24th September, 1833, and one may be able to form a notion of the innumerable difficulties that the skilful geological engineer must have encountered when one knows that the works of boring and tubage were not completed till the 26th of February, 1841—more than seven years of tribulations, accidents, and deceptions, which would have disheartened most engineers. But M. Mulot promising always success in a manner so certain, and based upon serious geological documents and calculations, the men betook themselves with vigour to the work, and the implements of their apparatus brought away successively the different beds of earth, marked upon the geological map, traced *à priori*. At last the green sand was reached: it was the last bed of earth, and the water leaped up with impetuosity. The borer had arrived at the extraordinary and predicted depth of about 1,790 English feet.

It was necessary to add to this depth an ascending tube of 110 feet, so as to attain the height the water was to reach; that is to say, about 1,900 feet from its starting point.

The water is produced from the pluvial filtrations of the lands of Champagne.

Since 1841, a cage of woodwork had been erected round the tube of ascension; but as the juxta-position of that erection rendered repairs difficult in case of accident, the administration decided that a cast-iron monumental fountain should receive the ascending tube, and should replace the rustic scaffolding established originally there.

In the centre of the Place Breteuil, then, they are about to erect the fountain, of which we give in our present number a drawing, from the design of M. Ivon, the engineer.

In the centre of a circular stone basin, bordered by a railing, raised upon a stone base, rises the new tube of ascent. Round this tube circles a spiral staircase, consisting of 150 open steps, 2 feet 6 inches in width, which conduct to the platform of the campanile, the terminal

of which is raised 139 feet 8 inches above the ground.

The enclosure of the staircase is of hexagonal form, and 6 feet 10 inches wide. Four external platforms or balconies encircle the monument, and project gushing sheets of bubbling water.

## THE REVIVAL QUESTION.

A CORRESPONDENT, "W. P." writes in the number of the *Builder* for the 31st of October, on "How are we to revive Gothic Architecture?" His purpose and feeling are evidently excellent. Far be it from any one to declaim against his reverent estimation of "our national architecture," "the noblest style of architecture that has ever prevailed." He is honest and simple in his judgment.

It would, however, be entirely unnecessary to notice his remarks if they contained nothing more powerful and noticeable than the well-worn similes and statements respecting the grammar of art and original composition, and the difference between design and imitation; but his letter contains some notions that, although conventional and ordinary, are really false.

The new grafts on the old stock are not by any means to be of foreign birth or growth. All the forms invented by continental artists, and all the suggestions embodied in their works, are to be carefully passed over by English architects. This statement is apparently made under the excitement of a lecture on indigenous art, or of the study of some of the very bold and very dogmatic teachings of revivalists: surely it is not to be received in soberness.

Are the buildings of France, Germany, and Italy perfectly out of the pale of beauty, and useless for artistic teaching? Is their expression so utterly incompatible with the Gothic feeling in other places that they cannot supply one sentiment or enlarge for benefit the circle of architectural forms and feelings?

"W. P." did not mean this. He would probably instantly disclaim it. His mind was, perhaps, fixed on the forcible and unnatural introduction of ill-assorted forms of continental art into our own ancient buildings.

How pathetic is his exclamation, "For heaven's sake let us have no patchwork churches!"

Why churches, friend? Mr. Scott does not confine himself in any way to ecclesiastical building: he is arguing for the aim of his revival—for the fitness of Gothic architecture for all purposes. And if "W. P." wishes to guard against patchwork building, he must enforce his objection to it on wider grounds than its application to old English churches. No one doubts for a moment that there is evil in importation to them of foreign forms, mainly because their character is already chosen and fixed, and is better unchanged. They are relics—not mere articles of use: they belong to us by birthright—not by our toil: they ought to be preserved, stable and perfect, for our followers. But modern buildings are of a different order: they are the books that we are to write—the wealth we are to leave for the benefit of our successors, and in them we ought to use every thought that we can cull from nature and art in our own country, in our own minds, and in all other places—all cast in our own mould.

There will be no more patchwork in a well-woven concord of ideas—some gathered from old work, and some from original thoughts—some from foreign, and some from native buildings—than in a landscape of the first order taken partly from nature, and planned and executed by rules of art.

"W. P." lays down before us the means by which the revival must be carried out. He finds it necessary to give us a short sketch of the periods of English art: he does this in the ordinary way: Early English, Early and Late Decorated, and Perpendicular, all pass in review. He is, perhaps, mistaken about the source to which he traces the failure in the progress of art in the fourteenth century. It is apparently to be more ascribed to the peculiarly altered texture of the thought than to the original want of consideration. The people, during the change from geometrical to curvilinear outlines, found their field less confined,—their opportunities vastly increased,—and their freedom really unlimited; then they gave way to the force of their imagination,—gradually cast off the grasp of reason and custom,—and gave the rein to rich and varying fancies. As they advanced, they in time became conscious that they had lost command, and had got out of the way. This led them to turn for rest and reform to the style of sharpness, precision, and lines,—called Perpendicular.

That they did lose sight of the principles of the direct subordination of parts, and the depth and boldness of moulding, is also manifest; but these inattentions to laws and to constitution are now, as then, the natural and continual consequences of an unrestrained fancy.

"W. P." cannot often have seen bent willow wands in moulded stonework: the nicety of workmanship and delicacy of finish are, however, ordinary remarks.

"W. P." makes an observation concerning the one unbroken chain of styles; but this comparison, as he puts it, will hardly answer his aim. He does not intend that we are to consider the latest point of our ancestors' work as the proper starting-post for our own advance; yet they only ended the chain when they ceased to build at all—originally. This is rather against the revival in principle. Mr. Scott would not endorse it.

"W. P." cannot mean, either, that this *unbroken* chain was *broken* at any point at which we are to take it up.

We suffer much from far-fetched and ill-formed comparisons. "W. P." would have read us a lesson better in the homely prose we like best. He must mean that, to carry on the architecture of the past, we must begin our *progress* where our ancestors left the main high road for that road they really followed—or of the chain—that we must take off the links that fit not the rest, and forge additions to it that shall carry it on in good proportion and in proper strength.

Concerning "W. P.'s" opinion of the "stupid, conventional, and unobserving custom," that Mr. Denison so loudly denounces, it is evident that he is somewhat led away from his observation of old churches by Mr. D.'s talk of modern ones. Thin walls, small cost, and necessarily large internal openings, necessitate a certain law in the matter: the massive masonry and the lavish cost of ancient work allow of any conceivable device. We are now hampered, but "W. P." is right in urging that we ought to do the best we can with our opportunity.

He will probably read me and my remarks justly: if so, he and I will both be satisfied. S. F. C.

## WORCESTER CATHEDRAL: THE NEW WORKS, AND "VIATOR."

I DO not intend to enter into any controversy with "Viator." When I observed in "Viator's" critical description of Worcester Cathedral, printed in your columns, many statements which I knew to be incorrect, together with many expressions of opinion which I believed to be calculated to mislead, I wrote to you for the purpose of correcting the errors, and of recording my protest against the opinions. I retain my own opinions, and my corrections of "Viator's" errors require neither explanation nor vindication. But I trust that you will permit me to leave your correspondent's ready flow of anonymous personalities to the regret with which they must be regarded by every candid and courteous reader.

In his last production, "Viator" states that I said at Worcester, that the exterior of the cathedral was equal in beauty to the interior, and this assumed statement he is pleased to regard as "simply preposterous." I never said anything of the kind at Worcester. What I did say was, that "the exterior of the Early English parts of the cathedral, as originally built, was no less consistent with the style of the architecture, and no less worthy of admiration than the interior." I am well aware of the present sad condition of this exterior, and I have expressed myself without reserve upon this matter; at the same time I can see evident traces of what this exterior once was,—traces which would render it an easy work to reproduce the whole in its original character. Were such a restoration effected,—were the early buttresses to resume their first aspect, and the corbel-table and parapet to become again what they were 600 years ago, and the Early English windows once more to appear in their true forms, and to reproduce their original grouping,—and were such a restoration to be completed in all its details in this same spirit, I should be ready to appeal to any competent and impartial judge to pronounce an opinion upon the external dignity and beauty of the Early English Gothic of Worcester Cathedral. "Viator" compels me to rectify another mis-statement. He deliberately asserts that the "Handbook of Worcester Cathedral" which I have undertaken to write is "a self-imposed task." Instead of this being the fact, this is a duty entrusted to me by others, and by me undertaken at the request of those gentlemen whose property this "Handbook" will become when it is completed. "Viator's" own essay on Worcester Cathedral appears really to be a "self-imposed task." "Viator" may object to such a duty being entrusted to me, and when my work is published he may regard it with contemptuous derision: I sincerely regret to be obliged to admit that his commendation and his censure are to me alike a matter of indifference,—until, that is, he has acquired the habit of "diligent, sustained, and thoughtful examination," and has learned how to discriminate with sound judgment, and to write with minute accuracy and under his own name. "Viator" evidently considers minute accuracy in what are apparently little things to be beneath his notice: it is just possible, however, that some importance may attach to the exact position of such an object as the anomalous pier in the Worcester choir; and though "Viator" may not look a second time before he determines whether the lions in a shield of arms are or are not quartered with fleurs-de-lys, or whether the lions themselves are quietly walking with three legs upon the ground, or are in an erect attitude on their two hind legs only; yet these are just the matters which either furnish correct historical data, or lead the student of history astray. What am I think of "Viator," considering that his "quartered" lions and fleurs-de-lys "can scarcely lay claim to an antiquity higher than the twelfth century?" The obscurity of the gloomy day must have been very obscure indeed, to have so completely overshadowed all remembrance of the fact that the French lilies were first placed on the shield of England by Edward—not the Confessor—but the Third.

"Viator" is angry with me because I supposed him to be a *traveller*. I did so without the slightest idea of giving offence. I believed that he was a "traveller," because he wrote himself "Viator." If I had supposed he would have preferred it, I would have rendered him a "wayfarer;" or, had I known his fancy for Latin, he might have been left, untranslateable, "Viator." Indeed, if I could have imagined that he had selected his assumed designation upon the same principle that he described the cathedral, I would even have supposed that "Viator," in his particular case, signified one who resides regularly at Worcester. As it is, I take my final leave of your correspondent as "Viator," which may mean whatever he pleases. I hope, however, that you will permit me, in plain English, to assure you that I am faithfully yours,

CHARLES BOUTELL.

## CHURCH-BUILDING NEWS.

*Lincoln.*—The monument to the late bishop (Kaye) of Lincoln has been erected in the south arm of the east transept of the cathedral, contiguous to the tomb of Bishop Grostete. It consists of a square Gothic base, supporting a figure of the late bishop, sculptured in white marble. The deceased is represented in the moment of death: he is clothed in his episcopal robes, and reposes on a mattress, his head supported by a pillow, his right arm across his breast, with the hand clasping the sacred volume, and the left hand just relaxed from the crozier which lies by his side. The sculptor was Mr. Westmacott, R.A. The pedestal is arcaded on each side, the intervals being pierced with trefoils, surrounded by foliage. Around the edge of the table runs the record in Latin of the deceased's titles, and the dates at which he gained his various promotions.

*Little Canfield.*—The church here, which was originally one of the earliest and rudest of the sacred edifices in this neighbourhood, has been lately almost entirely rebuilt, and is now completed in the Decorated style, except the south door, which has been kept to the original. Eight new windows have been placed in the church and vestry: the wooden bell turret has been removed, a gable carried up with cross and coping, and a new tower and spire rising to the height of 80 feet erected on the north side of the church, with an entrance at the west side, and windows north and east, in character. The tower communicating by an arch with the nave of the church, the gallery or organ loft has been removed, and the instrument now stands under the tower arch. A new porch with tracery has also been built on the site of the old wooden structure at the south entrance: this is in the Perpendicular style. The whole of this renovation, including the tower walls, buttresses, and spire, has been worked in Caen stone. In the interior the chancel floor has been laid throughout with encaustic tiles: a niche, surmounted with tracery in stone, has been placed in the north wall adjoining the vestry, and to the latter a new stone staircase has been built. The old pews in the chancel have given place to open Gothic benches. The rector, the Rev. C. Lesingham Smith, was his own architect and paymaster. The contracts were taken and the works executed by Mr. W. Jago, of Great Dunmow, mason and builder.

*Geddington.*—On the 29th ult. the old parish church of St. Mary Magdalene, Geddington, was reopened, after extensive repair and restoration. The church has been enlarged by the lengthening of the north aisle, and much additional room has been gained by the removal of the huge galleries and pews which before disfigured it. The seats are all open, and of deal, stained and varnished, and afford accommodation for upwards of 500 persons. The floor has been paved with Minton's tiles. A new vestry and porch have been built. Several arches, before hidden, have been thrown open, and a new one built in the south aisle. The woodwork was done by Mr. S. R. Brown, of Kettering, and the masonry by Mr. E. Patrick, of Geddington. One of the most remarkable features

in this church is the length and height of the chancel, which dates as far back as 1369.

*Berwick Bassett.*—The church here, which has recently been undergoing repair, has been re-opened. The building, part of which is in the Early English style, and dates from the eleventh century, is almost entirely new, only parts of the nave and chancel walls being left of the old structure. The vestry is new, as also the tower. The stone used is found in the neighbourhood, the dressings being of Bath stone. The tower is covered with a pyramidal roof, hung with plain red tiles, and surmounted by a finial and gilt cock. All the roofs are of deal, stained, and are covered with stone slabs, with crosses on the nave and chancel. All the fittings are of English oak, as are also the pulpit, desk, and lectern. The chancel contains four benches, with carved poppy-head ends, altar rail, and table. The chancel is laid with Minton's tiles. There is a stained glass east window, and on the south side a memorial window to Mrs. Hawkins. The work was executed by Mr. Major, of Swindon. The architect employed was Mr. Thomas Wyatt, of London. The cost of the rebuilding was about 900*l.* Towards this, a donation left by the late Mrs. Hawkins, of Avebury, amounting to 200*l.* was available; and in addition, the sum of 100*l.* was given by the Marquis of Lansdowne, the lay impropriator of the parish.

*Hawarden.*—The chancel of the church, which has received comparatively slight injury from the fire, is being enclosed by a brick wall, and with deal boarding and asphalte felting the roof will be made waterproof, and the chancel will then be used for divine service until the remainder of the church has been rebuilt and restored; after which all the damage done to the chancel will be made good. With reference to the re-building, a meeting of the parishioners has been held, at which Mr. James Harrison, of Chester, architect, reported as to the state of the church. He estimated the expense of re-building the pillars and arches in the nave, and restoring the windows in the west end, the roof of the nave and aisles, the floor, seats, doors, and the pillars, arches, and floor to the tower, re-glazing the windows, and completing all damage, at an outlay of 3,025*l.* He also estimated the restoration of the roofs, stalls, &c. in the chancel, at 413*l.* A plan for raising funds, by rate and subscription, was agreed to, and a subscription list at once opened, when 500*l.* each were subscribed by Sir S. R. Glynne, Mr. Gladstone, M.P. and the Rev. R. Glynne, the rector; and 100*l.* each by the Bishop of St. Asaph, the Hon. Mrs. Talbot, and others: various smaller sums were also subscribed.

*Liverpool.*—The church of St. Stephen, Crown-street, was re-opened on the 27th September, the work having then so far progressed as to admit of public worship being celebrated. The alterations, says the *Courier*, were imperatively called for on account of the defective construction of the roof, the entire of which was untiered, and the chancel portion was quite open to the severity of the weather. The chancel-roof has been made good, and over the nave a new polygonal panelled ceiling has been put up to prevent down draughts. The whole of the church internally has been cleaned down and coloured, and the entire of the woodwork newly varnished. The chancel has been improved. The east window, hitherto covered with a curtain, which gave a dismal look to the church, has been removed and replaced by a stained-glass window, manufactured by Messrs. Pilkington, of St. Helen's: the window is necessarily simple in its design. The top having three circular portions, is filled with a medallion of the "Stoning of St. Stephen," and with two groups of angels bearing palms: the centre of the five lights has a large figure of St. Stephen under a canopy. A new reredos of Caen stone, with marble shafts, supporting crocketed and finialled canopies, has been erected in the chancel. The stone carving has been executed by Mr. R. W. Tuchoff. The warming of the church has been improved, under the superintendence of Mr. Hazard, warming and domestic engineer. The work has been carried out from the designs, and under the superintendence of Mr. Thomas W. Kingsmill, of Dublin. A member of the congregation acted as clerk of the works.

*Newmarket.*—For some months past the formerly dilapidated fabric of St. Mary's Church, Newmarket, has been undergoing a thorough repair. The old pews and galleries were substituted by open seats, affording more accommodation: a gallery, extending the entire length of the body of the church, has been erected, the floor laid with oak, and gas-pipes carried to every part of the building, the walls cleaned and repaired, and new windows put up.

*Burringham.*—The new church here has been opened for divine service. The edifice is in the Early English style, and built of red brick, with slated roof. The interior is also all of brickwork, in three colours diapered. The pulpit and font are of brickwork, blended with mosaics. The windows are glazed in geometrical patterns, except the easternmost, which is a painted window of the two Marys at the tomb, presented by Mr. H. Healey, of Ashby. The length of the church, from east to west, including the chancel, is 67 feet; and the whole occupies about 2 roods and 36 perches. There are twenty-eight stalls in the church, and a few seats for children, all of which are of American deal, stained. The cost of the building, exclusive of internal arrangements, is 1,000*l.* and with the internal arrangements, 1,300*l.* About 640*l.* have been raised by public subscriptions. Mr. Teulon was the architect; and Mr. Johnson, of Laisby, near Grimsby, the builder.

*Otterburn* (*Northumberland*).—A new church has been erected in this village, and was recently consecrated by the Bishop of Durham. The edifice is in the Decorated Gothic style of architecture, from designs by Mr. John Dobson, architect; and cost about 3,000*l.*

## PROVINCIAL NEWS.

*Ely.*—The bishop and dean and chapter have made arrangements for the erection of schools in the city of Ely. There will be two in the upper and one in the lower town. In Silver-street, in the upper town there will be schools for 400 children, and a committee-room; also a school for infants in Gaol-street, with a residence. In the lower town in Broad-street there will be an infant school for 100, and an adult school for 100. Mr. S. S. Teulon is the architect. The style of the buildings is Early Decorated. They will be of brick and Casterton stone.

*Chippenham.*—The local guardians have determined to erect a new workhouse. The site has been selected, and an agreement signed for purchase of the land. Mr. Christopher Creeke, of Bournemouth, has been appointed architect for the completion of the building. It will be erected in a field at Rowden-hill, near the Bath turnpike-road, and about half a mile from the town.

*Stafford.*—St. Peter's Schools, Hixon, have been opened. They are erected on a piece of land adjoining the church, the gift of Earl Ferrers. The erection is of red brick, faced with stone, with stone copings to the gables, and is 36 feet by 18. The walls are 13 feet high, with an open timbered roof, rising 7 feet from the wall-plate. The timber of the roof is stained and varnished. The building is lighted by five lancet windows, one at each end, and three to the front. The school-room is entered by two porches, one for boys and another for girls, and the floor is boarded. Requisite outbuildings adjoin for the convenience of the scholars, and the master's house, erected in a similar style is attached. The school premises are surrounded by a playground.

*West Hartlepool.*—The contract for the erection of a new pile of warehouses on the east side of the Swainson Dock, West Hartlepool, has been let to Mr. Samuel Bastow, of West Hartlepool, at 11,000*l.* The range of buildings will be 400 feet long by 100 feet wide.

*Alnwick.*—A movement is in progress in Alnwick for the purpose of obtaining a covered building or corn-exchange, where farmers and corn-merchants may meet together and transact their business.

*Lichfield.*—The contractors for the Museum are Messrs. Lilly, *of* Meosham; not Messrs. Lilly and Meacham, as stated.

## NEWS FROM SCOTLAND AND IRELAND.

*Kilmarnock.*—Building operations have been going on here with activity for some time past. A number of villas have been erected in the suburbs. In Portland-street, the Royal Bank buildings, from the designs of Messrs. Peddie and Kinnear, of Edinburgh, are approaching completion. The Episcopal Chapel in St. Marnock-street has been consecrated: the building partakes of the Early English style, and consists of chancel and nave, with open timber roof, which, together with the seats, are stained. In the same street a range of dwelling-houses and shops is in course of erection. They are in the Italian style, having triangular and segmental pediments over the windows. The architect is Mr. Ingram, of Kilmarnock. In Fould's-street, a small chapel has been erected, and a number of other houses in various parts of the town.

*Aberdeen.*—The anticipated scientific meeting of the British Association, in 1859, has induced some of the more enterprising and intelligent of the citizens of Aberdeen to bestir themselves in order to provide an adequate place of meeting for their expected visitors; and this they propose to effect by means of a subscription for the erection of a building to be permanently devoted to such public purposes as "a music-hall" is usually intended for. A subscription list, amounting to 1,600*l.* has already been got, and when 2,500*l.* are raised, the work will be proceeded with. The hall will belong to a Joint Stock (limited) Company, and will probably cost some 5,000*l.* or so, and be capable of accommodating 2,500 persons. The provost heads the subscription list with 100*l.*

*Belfast.*—A correspondent says:—"The Roman Catholic workmen of Belfast are about to build a splendid hall, with library and reading-room attached. This new hall is intended to hold 3,000 persons, and, when completed, will be one of the finest buildings in Ulster."

## STAINED GLASS.

*Lincoln.*—Another memorial window has just been placed in the chapel of St. Anne's Bedehouses. The window has been designed and executed by the Rev. Henry Usher, a native of Lincoln, who has long devoted attention to this art. The window is the north triplet in the chancel, and consists of three figures of nearly life-like size, under foliated canopies—one in each compartment. The central figure represents Elizabeth, the wife of Zaccharias, and his wife: on the left side is Simeon in the act of blessing Zaccharias and his wife (Luke ii. 34), and on the right side Joseph of Arimathea, having his traditional emblem, a hawthorn branch, in his hand. At the foot of the figures in the foreground is grass bestrewed with flowers, and mountain scenery in the distance. The window on the opposite side was executed by Mr. Usher some two years since, and for the west window he has already prepared designs, the subject being the Nativity of our Lord, and the Visit of the Magi.

*Ashbourn.*—A lancet window has been placed in the north transept of the old church here by Mr. Lister, to the memory of his late uncle. The window has been painted by Mr. W. Warrington, of London. It consists of borders, foliage, and three medallions. The upper medallion is emblematic of Charity, embodying the inscription, "I was hungry and ye gave me meat;" the middle one of Honesty—the just steward rendering his talents to his lord; and the lower one of Hospitality:—"I was a stranger and ye took me in."

*Winchester.*—A commemoration window of stained glass is being placed by Mr. Gibbs, of London, in Winchester Cathedral, at the western extremity of the south aisle of the nave, in honour of the officers of the 97th regiment who fell in the Crimea during the late war.

*Aberhafesp.*—Another stained glass window has been placed in the chancel of Aberhafesp church, near Newtown. This window is about 12 feet high by 6 wide, and is in the perpendicular style, with somewhat florid tracery. The three bottom lights illustrate the narrative of the Canaanitish woman's appeal to the Saviour to "have mercy on her, and heal her daughter." The Saviour is attended by seven of his apostles, including St. John and St. Peter. The upper parts of the lower lights contain landscapes of the ancient fortified city of Tyre; and coasts, with trees and foliage peculiar to eastern scenes, forming a relief to the figures in the foreground. The upper parts, or tracery lights, are filled with the Heavenly Host, represented by doves ascending almost surrounded by vast numbers of cherubs. This window is the gift of Lieutenant General Proctor, and is the work of Messrs. Thomas Baillie and Co. of London.

## SANITARY STATEMENTS.

*The Effect of Sanitary Measures.*—In a paper read at the late Birmingham Conference, Mr. May, of Macclesfield, added another item to the existing series of proofs of the saving of life and money which may be produced by sanitary arrangements. In 1847 and 1848 Mr. May called the attention of the inhabitants of Macclesfield to the mortality which prevailed there, and the state of things which led to it. When these evils were made sufficiently apparent to command attention, the Public Health Act was introduced, and constructive works were immediately commenced in the worst streets, and courts the most notoriously filthy, and where sickness and mortality were most in excess. The streets were sewered, paved, and flagged, the houses all drained, additional means of ventilation introduced, and the yards and courts drained and flagged; and the contrast which they then presented, and effects which followed, were most striking. First, with regard to the rate of mortality. For seven years it was 33 in a thousand on the average: it has now been reduced to 26 in a thousand. If this fact were taken alone it might be considered of little value, but it will be remembered that certain streets were described as possessing a frightful rate of mortality; and as these streets were the first to be improved, the decrease in the mortality has been in one of the streets 60 per cent.; in a second, 42 per cent.; in a third, 40 per cent.; in a fourth, 34 per cent.; and in a fifth, 12 per cent. It is deserving of remark, that the street in which the decrease was the greatest was the first to be improved, and that in which there was the least decrease was the last

executed, showing that the longer the works have been in operation the greater the decrease, up to a certain limit. The average age of death of all persons was twenty-four years, or ten years less than the adjoining rural districts: it is now twenty-nine years, or five years less than the rural district. But to afford a striking example of the difference between the average age of death in streets where the sanitary arrangements were completed, and others devoid of such, four of each were fairly selected for comparison, and in the former the average age of death was 34, whilst in the latter it was 19 years. Throughout England the mortality of children under 5 years is 39 per cent.: here it is 40 per cent. and the reduction has been 13 per cent. For each death it is proved from correct data that there are 28 cases of sickness, so that it will be conceived how large a number of cases of sickness must have been prevented, with all their attendant loss and suffering; but in order to prove the fact, it was ascertained that according to the relief books of the board of guardians the number of cases of sickness relieved and attended by the union surgeon, in the streets that were drained, were from 24 to 29 per cent. less compared with the past, whilst, in certain other streets enumerated and not drained, there was no decrease at all. There must, it is fair to presume, have necessarily been a corresponding decrease of cases attended by other medical men than the union surgeon, in the first-named streets. Other works were done and other improvements followed, including a considerable decrease in the amount of crime.

*Evils of Inhabited Stables.*—The monthly report of Dr. R. D. Thomson, the medical officer of health in Marylebone, states that amongst the deaths during the five weeks ending October 31st, fifteen are registered as having occurred in mews, and nineteen cases of zymotic sickness had been attended by the parochial surgeons in similar localities. The inspection of houses over stables in mews had occupied much of the time of the inspectors, and had continued to lay bare a highly unhealthy condition of the servants of the higher classes. 163 "inhabited stables" had been examined during the month. When asked, at a meeting of a representative council, whether he considered the mere fact of persons living over stables where horses were kept, and of which there were so many instances in that parish, was in itself injurious to persons so living irrespective of any other cause, Dr. Thomson said the point very much depended upon the situation of such habitations. He did not mean to imply that the mere fact of persons living over stables containing horses was injurious to health, but the fact was that in most instances the mews had been constructed in such a way that the buildings were without closets, and had very bad drainage, and these circumstances, coupled with the keep of horses beneath the dwellings, had a prejudicial effect on health, but it did not arise solely from horses being kept underneath. A medical man told us, not many days ago, of a groom residing over a stable in Belgravia who had lost three children, one after the other, as they reached a certain age, and who had been, with tears in his eyes, to ask him how he could save the fourth, then sickening in a similar manner. The advice was, leave the stable, and get a healthy lodging. The advice was taken, and that child is now healthy and thriving. We know of half a dozen such cases, and can, therefore, corroborate most positively Dr. Thomson's statements.

## THE METROPOLITAN BOARD OF WORKS.

The President of the Metropolitan Board of Works and the Chief Commissioner had a conference on Thursday in last week, on the first principles to be adopted with reference to the main drainage; the details to be settled by the referees appointed by the Chief Commissioner and the engineer of the Board assisted by two others. Mr. Thwaites laid the case of the Board before the Chief Commissioner, and pointed out that the principal points of difference were the proposed open channels, the increased area to be drained, and the expense of carrying the point of discharge or outfall so much lower down the river. Upon the first point, namely, the open canals, Sir B. Hall at once admitted that open canals were objectionable. With respect to the second point, the extension of the area, Sir B. Hall, according to the reports of the daily press, wished the Board clearly to understand that it was the duty of that body to intercept all impurities flowing into the Thames within the metropolitan area; and he explained this by showing that if a stream became contaminated *beyond* the metropolitan area, but discharged itself *within* that area, then the sewage passing into such stream should be intercepted. With regard to the third point, the point of outfall, the Chief Commissioner was clearly of opinion that it ought to be at Sea Reach, and that if the Board were to have it at Erith, public opinion would protest against it, and the Board's works would probably be stopped by Chancery as a nuisance. On Friday Mr. Thwaites reported to his own Board the result of the interview. He stated that Sir B. Hall had given up the open channels and the extended drainage area. This discrepancy at once struck the Board, and Mr. Thwaites was again asked to explain; but he adhered to his first assertion. The Board thereupon resolved to have their own short-hand writer's notes written out *in extenso*, and printed for the information of the Board.

There appears to be also a misunderstanding as to who should pay the cost of the extension to Sea Reach. Sir B. Hall pointed out that the cost would be merely an annual rate of five farthings in the pound additional.

Next Monday the several questions thus stated will come on for unravelment by the Metropolitan Board.

## LAMBETH ASSOCIATION FOR PROVIDING IMPROVED DWELLINGS FOR THE LABOURING CLASSES.

This association, formed under the provisions of the Labourers' Dwellings Act, has commenced its work in Lambeth, on a vacant piece of ground situated between the railway and Vauxhall-walk. A brick building is now in course of erection there, which will contain sixty-four rooms, or thirty-two sets of two rooms each. The approach to the first and two upper stories is by means of a staircase communicating with external galleries. It is expected that the association will be able to let the two rooms for 3s. 6d. per week, and then obtain a fair profit. Four water-closets are provided on each floor: this gives one closet for the use of two families. As an endeavour has been made to build more cheaply than usual, in order to let at a less rent than is ordinarily paid in improved or model dwellings, the directors have been content with this amount of water-closet accommodation, as they are convinced that even this is much better than the poor now obtain. Each room is ventilated by means of the patent syphon ventilator. The architects are Messrs. Ashpitel and Whichcord; and the builders, Messrs. Colls. We understand that the directors of the association have ordered drawings to be made, and tenders to be obtained for fifteen houses, to be built in the same locality. Each house will contain four suites of three rooms each, and will be for the accommodation of those who are able to pay a somewhat higher rent than will be charged to the inhabitants of the house now building.

## THE BRAINTREE BURIAL BOARD AND THEIR CONTRACTOR.

My attention has been called to an article in your publication of Saturday last (p. 633), relative to a claim made by Mr. Brown, a contractor, against our Burial Board. I have no reason to complain of the manner in which you have treated the subject, but I do complain of the "committee of gentlemen who have associated to protect the interests of the contractor," that they, being in possession of all the necessary particulars, have apparently withheld from you one or two facts, which become of importance when they attack the Board with the accusation of doing an injustice.

The question, which, as you say, is one of principle, is, whether a builder, who has purchased bills of quantities from an architect, has a right to sue the architect's employers, if, in consequence of an error in these quantities, he finds it necessary to use more materials than he anticipated.

On this point the Board wish for a decision. But Mr. Courtauld, who was chairman of the vestry meeting to which you have alluded, not content to wait the result of the trial which has commenced, and is now in progress, has written and published a letter, in which there is a total absence of that propriety of feeling which we have a right to expect from one who occupies the position Mr. Courtauld has gained. To this letter I have published a reply, which is, I fear, too long for insertion in your paper; but I enclose a copy, referring you particularly to Clause I. in Mr. Brown's security, as showing the terms upon which Mr. Brown's contract was undertaken;* and when I tell you that the Board contend that the bills of quantities were prepared by the architect, and sold by him for his own profit, and that the board deny that Mr. Brown, or his sureties, signed the security under pressure, I think you will see that the board have not only an important principle for which they are contending, but that they are doing so fairly and dispassionately.

If I may offer my own ideas on the main question, and on which you have refrained from giving a positive opinion, I will do so. It appears to me to be a convenient practice, that bills of quantities should be prepared, whether by the architect or not I consider immaterial. I think builders perfectly justified in sending in tenders based on these quantities; but here the use of them should stop. Whenever the tender of a builder is accepted, he ought, before signing his contract, to satisfy himself that he has based his calculations on correct data. If it should turn out that the quantities are wrong, surely he would have a remedy against the person from whom he purchased them; but if, after satisfying himself of the correctness of the quantities, or (at his own risk) neglecting to do so, he signs a contract or security to complete the works, according to the plans, for a stipulated sum, he surely ought to have no remedy against his employers because he neglected to do that which it was palpably his duty to do more than theirs. Try the question from the opposite point of view. Suppose, when a contract is completed, the employer says to the builder, "You based your calculations on the assumption that you would require 1,000 feet of stone, when, in fact, you have only used 500 feet. I have contracted to pay you 1,000*l.* but I shall refuse to pay you more than 900*l.* in consequence of this mistake." What would the builder say about justice then?

Probably all bills of quantities are more or less inaccurate; but so long as they are used merely to assist the calculations of the multitude of persons who tender, they are a very useful invention; but to hold that because a man, on the faith of them, has advisedly signed a bond, or other legal document, to perform certain works, he may afterwards repudiate his liability, would be a most dangerous policy, and, as it appears to me, within the limits of neither law nor equity. A. Cunnington.

*** We have since received a communication from Mr. Brown, the contractor, and documents from other parties interested, and we postpone further comments in consequence.

* "Clause I. That he the said contractor shall and will build, erect, and complete two chapels * * * according to certain specifications and drawings prepared by Mr. John Johnson, of Bury St. Edmund's, the architect employed by the said board. * * And shall do and execute all such works (whether particularized in the said specifications or not) as shall be requisite for the erection and completion of the said buildings and works, or may be reasonably inferred from the said specifications and drawings, in a good substantial, durable, and workmanlike manner, and provide all materials for the same of the best and most approved quality, and carry and convey the whole thereof at his own expense and risk. And in all respects complete the said works to the satisfaction of the said architect."

## LIVERPOOL ARCHITECTURAL SOCIETY.

GLASGOW CATHEDRAL.

At a meeting of the above society, held on Wednesday, the 4th inst. Mr. Huggins, president, who was in the chair, exhibited a manuscript "Table of Architects and their Works, chronologically arranged," which had been presented to him by its compiler, Mr. Francis Sullivan, of Manchester, known to the profession by some contributions to the *Builder*. It contained a very full list of the principal architects of all ages and nations, from Hiram, the builder of Solomon's Temple, and Dædalus, the architect of the Labyrinth of Crete, down to the latest deceased practitioner of our own time and country.

Mr. F. Howard read a paper "On the Decoration of Glasgow Cathedral with Stained Glass." The author read copious extracts from the proceedings of the committee, at Glasgow, appointed to select an artist to execute a design for the windows. Upon these proceedings he commented, contending that the committee had not shown any reasonable grounds for the selection of a Munich artist, and that they were incorrect in their notions of glass designs. He referred to what might be considered the elements of Munich celebrity, which had merely been obtained from the King of Bavaria paying high prices for designs. These had been introduced into various buildings in Bavaria, and had been the means of raising up a number of glass-stainers in their own peculiar way. Was it to be supposed that artists would execute the work for 2*l.* the square foot? and if not, where would they get the designs at all? He contended that the works of the Munich artists were merely copies of old German works, and did not possess that ingenuity which was attributed to them. They were such windows as English artists had been improperly accused of making. If it were intended that such pictures should be an example to British artists, they declined to take them. Mr. Howard offered some practical observations on the various styles of glass-staining, and the mode of treating subjects, and defended the English artists from incapacity — a charge involved in the recent proceedings of the committee at Glasgow. In conclusion he commented upon a subject which had been recently brought under notice in some of the newspapers, namely, the execution of works of art by commission. It was urged that artists could not be trusted to work on commission, and that was an argument which had been put forward by the Glasgow committee. Such an assertion could not be maintained by facts. Experience showed that all the first

works in the world had been produced on commission. The Elgin marbles would not have been executed except they had been ordered. Michelangelo and Raffaelle received commissions for their most celebrated efforts, and all the greatest works in Italy and in this country had been executed on commission.

Mr. James M. Hay said:—The school which the German and French artists follow is one open to the gravest objections. Glass-painting is an art of its own, and not an imitation of pictures, with light and shadow, distant backgrounds and aërial perspective. Each subject should be complete of itself, and confined within the stone framework or mullions provided by the architect. The art to which glass-painting is more closely allied than any other is mosaic, for the artist makes out his subject somewhat after the same manner, and, by cleverly combining pieces of glass of various colours, produces a work of such brilliancy, sparkling effect, and gem-like appearance as can be obtained by no other means. I can testify to the absence of this quality in the Munich windows at Cologne Cathedral, to which allusion has been made, as well as to the window by Luban, of Tours, in the Church of the Innocents in this town. This false style has been abandoned for years by all our best glass painters. I will mention one exception. The Duke of Northumberland has had executed a window for his private chapel at Alnwick Castle: the cartoon for this window was designed and prepared by Mr. Dyce, and was exhibited at the Art Treasures Exhibition at Manchester; and while the drawing, composition, and colour are equal, if not superior, to anything the Munich artists have done, there are the same faults which characterise that school. The window is of five lights, and the composition extends across them all: the actual framework of stone mullions is ignored; and twisted columns, strong and massive, with capitals and ogee arches, all of a non-descript character, are introduced, painted, setting the real architecture at defiance. This is the kind of glass painting with which the Glasgow committee are desirous of decorating the finest—the only cathedral in Scotland, and apply to Munich for what they can have equally well and better done at home. But a different principle from that of the Munich school is exhibited in all the best works of our best glass-painters: each compartment of a window is treated as a glass panel: the architectural framework is considered as perfect, and receives from their hands no supplementary additions of painted canopies, pedestals, arches, and other *et cetera*: the resources of their art, limited though they be, are sufficiently large to dispense with such factitious aids.*

## THE BRISTOL GENERAL HOSPITAL.

The new building which has been erected, by public subscription, for the purposes of this charity, is situated in the rear of the old hospital in Guinea-street. It is described as a central tower, from which two wings radiate at right angles, one facing the New-cut and having a southern aspect, the other facing Bathurst-basin and having a western aspect. Attached to the extremity of the western wing, and in the rear, is another building, so that the hospital may be said to form three sides of a square. The latter has a northern aspect, and the whole edifice stands upon a platform. The ground-floor of the building is appropriated to the accommodation of the resident officers, the committee, and the out-patients. The room in the base of the tower is the board-room: next to it in succession in the southern wing, are the library, the house-surgeon's dayroom and bedroom, the pupils' dayroom, and matron's dayroom and bedroom. On the opposite side of the corridor with which these apartments communicate is the main entrance, the staircase of the second and third floors, a dining-room, and some storerooms. In the western wing, in the front, are the museum, the surgeons' consulting-rooms, and the waiting-rooms for the out-patients of the surgeons and physicians, and in the back, the staircase of the first-floor, two casualty wards for males and females, and some other rooms. Outside both these fronts is a colonnade, and here the patients will take the air when occasion requires. The part of the building attached to the extremity of the western wing, and facing north, contains the physicians' room, the dispensary, and the drug-room. On the opposite side of the corridor is the porter's room, the window of which overlooks the yard, and some small rooms for different purposes.

The upper part of the building will be devoted to the in-patients and the nurses. The first floor will be occupied by males. The room in the central tower will be the sitting-room, during the day, of those patients who are able to leave their beds. In the southern wing are two large wards, capable of containing from sixteen to twenty beds each, with washing-closets attached; and between the wards is a room for the nurses, this being obtained by a projection in the face of the building. These rooms are so arranged that a single nurse can overlook two wards. On the opposite side of the corridor, that is, in the back of the building, is a very complete bath-room, a coal-store, a scullery, in which any medical cookery will be done, a small ward for exceptional cases, and another for patients after an operation. The western wing is arranged in a precisely similar way,—two wards, with a nurses' room between in the projection of the front; but the northern part of the building attached to it furnishes another ward, making five upon the whole floor.

The second floor, which is reached by its own staircase, is for the female patients. Its arrangements are precisely similar to those of the first floor, with this difference,—that at the back of the central tower, that is, in the angle where the two wings meet, is the operating theatre. The basement of the building contains a spacious kitchen, a sitting-room for servants, a spacious washhouse, in which the work will be done by steam, and all the other conveniences which can add to the completeness of the building, and the comfort of its inmates.

The floors are formed with Keene's cement on concrete, the only exceptions being the bedrooms in the top story, occupied by the nurses. An air-shaft runs up through the building at the angle of the wings, and every ward, every room, corridor, and closet is supplied with hot and cold air, with means of escape, the polluted air being drawn off by an apparatus in the roof. In addition to this, every room has one, and every ward two, open fireplaces. Hot, cold, and chilled water, is carried by pipes up to each floor, and the whole building is lighted by gas. Steam will be the chief servant of the house. The new hospital has been designed by Mr. W. B. Gingell, and we are told, in its present state, its cost will be about 15,000*l*. It is capable of receiving from 180 to 200 in-patients.

We give these particulars with which we have been favoured, but we reserve an opinion as to the plan and arrangements of the hospital in a sanitary point of view, until we have an opportunity to inspect it personally.

* The Glasgow papers state that Sir Benjamin Hall, as Chief Commissioner of Works, has ordered the removal of two stained-glass windows recently set up in the crypt of Glasgow Cathedral, and they are very angry thereat. We have not heard the grounds for the order.

## MONUMENT TO THE LATE ASSISTANT-SURGEON THOMSON.

The monument to that heroic man of science the late Assistant-Surgeon Thomson, of the 44th Regiment, is now complete. It is a granite obelisk, 65 feet high, comprising a shaft finely polished, and a base, on which are inscribed the deeds of him it records, and three steps. It stands on an elevated hill at the western extremity of Forres, a place made best known by "Macbeth."

This well-deserved memorial was originated by the late Director-General, Sir James McGrigor. It will not soon be forgotten how Surgeon James Thomson, after the battle of the Alma, when the British were leaving the field, voluntarily remained behind with 700 desperately wounded Russians, 400 of whom he succeeded in restoring. He contrived to escape the dangers which menaced him throughout his stay, but died very shortly after, from the effects of hardships and privations.

The muster-roll written by Fame in the Crimea has no nobler name in it than James Thomson. "His life was useful, and his death was glorious."

## ISLINGTON VESTRY-HALL COMPETITION.

On Friday, the 6th, the report of the special committee, referred to in our last, was laid before the Vestry. In reply to inquiries as to whether the designs selected could be carried out for the amount fixed, Mr. Harvey said it was taken for granted by the committee in selecting, as it was on that understanding alone architects had competed.

The committee being asked to state which were the best four out of the twelve, named No. 46, "Con Amore;" No. 50, "Utility;" No. 57, "Whyttington;" and No. 71, "A. B. C."

The Vestry then proceeded to the selection of the two plans for the premiums, on a motion by Mr. Cox, together with a proviso, at the instance of Mr. Elt, to the effect that the Vestry was not bound to build either. Mr. Timewell urged the consideration of the question of cost. Mr. James Wagstaff thought the Vestry ought to have more information out of the committee. The mode of voting was then considered, and Mr. Elt made a stand for a new system. It was, however, considered inadmissible, and the Vestry proceeded to select the two designs by taking a show of hands for each *seriatim*, and striking off the lowest, and then repeating the process, till at length the two successful designs were announced to be,—

1st, No. 50, "Utility," found to be by Mr. Henry E. Cooper; and 2nd, No. 46, "Con Amore," by Mr. Allom.

It was resolved that the committee should communicate with the authors of the designs, and take measures to satisfy themselves that the designs could be executed for the fixed cost.

## "WOODMAN, SPARE THAT TREE."

Sir,—Your observations on London gardens in a recent number emboldens me to claim your sympathy for the trees in this neighbourhood, which are threatened with deformity or annihilation by the vestry of St. Marylebone. Their surveyor gives us notice that it is against the law for any tree to overhang the garden-wall, and threatens that, if they are not duly cropped, our premises will be entered, and the tree cut down.

To my eye the most pleasing suburbs of London are those where the road is bordered by gardens, whose overhanging trees form a grateful variety to the ceaseless lines of houses. They are useful too, for often have I seen groups of people seeking shelter from a sudden shower under their foliage. One tree in this neighbourhood was peculiarly admired by the celebrated landscape-gardener you have alluded to, its graceful branches forming a most picturesque object in a bend of the road. It has already been injured by order of the surveyor, and is now again threatened by printed notice. We look to the press as our protector against ignorant and overbearing authority, and we hope not in vain.

An Inhabitant of St. John's-wood.

## NOTES UPON IRON.

Gloomy apprehensions and fearful forebodings are supreme in South Staffordshire. No failures are yet reported, but it seems almost impossible that some firms can hold out much longer. Every one held fast his confidence till the Dennistouns went. The connections of that firm are so many and so extensive, and the interest in these again so many and diversified, that the announcement by that firm, dated the 7th inst. was felt as "a heavy blow, and grave discouragement." These views were shown to be by no means groundless, when on Wednesday afternoon, the houses concerned received circulars from Messrs. E. B. Codrington and Co. of Liverpool, asking for time in consequence of the suspension of Messrs. Dennistoun. Some good home orders are being received in certain directions, and no alteration is stipulated in the kind of tender; but in most others no order can be got unless for a four months' bill, which at 10 per cent. and its uncertainty, is a greater risk than will be undertaken. The period is one of great suspense.

## SCENERY AND MUSIC.

*The Haymarket Theatre.*—Mr. Tom Taylor, an artist himself, has taken care to have two or three very pretty scenes for his new comedy, "An Unequal Match," which has been produced by Mr. Buckstone (the manager himself playing in it), with very great and well-deserved success. The curtain rises on "A Village in Glaizedale, Yorkshire," by Mr. Morris, with the inn and the forge, and the stage laid out in walks and grass plots, the whole very naturally and pleasantly built up; and it falls, in the third act, on a German watering-place, with the *brunnen* and the reading-room, and a picturesque mountainous landscape behind, very creditable to Mr. O'Connor. The scene for the second act, an interior, Jacobean in style, with a carved chimney-piece in two stories, strikes us as not quite a new friend. Miss Amy Sedgwick, who has the principal part in the piece, has not yet attained completely the art which hides art, but must, nevertheless, be considered a great acquisition. Compton is admirable: in fact, it is an exceedingly interesting and nicely written piece, very well acted, and deserves to be seen.

*English Opera at the Lyceum.*—Here, too, scenery has not been disregarded: indeed, the general completeness with which Mr. Balfe's new opera, "The Rose of Castille," has been produced, conjoined with the admirable singing of Miss Pyne and Mr. Harrison, has done much towards obtaining the full measure of success which attends it. The scene for the first act is the outside of a Spanish Posada, with pent house over the gate into the yard, and a mountainous background, very nicely painted and put together. For the second act we have a Moorish interior; whereof the floridly ornamented gates are noticeable. The music, lively and graphic, is amongst the best Mr. Balfe has produced, and the efforts of Mr. Honey, Mr. Weiss, and Miss Susan Pyne, in addition to those of the principals already mentioned, deserve the warmest praise. Here we have the work of an English composer interpreted by English singers, with the orchestra admirably conducted by an English musician, Mr. Mellon; and all those who pretend to sigh over the want of high musical talent amongst us,

and a national lyrical stage worthy of the country, should show they are in earnest by supporting the undertaking at the Lyceum.

*Jullien's Concerts at Her Majesty's Theatre.*—Foremost amongst the causes which have fostered the growth of a taste for superior music amongst the masses in this country, must be placed Jullien's Concerts. The provision of the best music for the public at small cost is no trifling good, and those who provide it deserve our earnest support. There was a little want of spirit perceptible in the performances, and enthusiasm in the audience, a few nights ago; but the new "Indian Quadrille," which will have been produced before the appearance of our number, will doubtless bring both back, and fill the house to the close of the necessarily short season. The band is admirable.

## RECENT PATENTS.*

L. J. Brethon.—*Improvements in Machinery for Manufacturing Draining Pipes, Bricks, Tiles, and all other similar Plastic Articles.* Dated Jan. 10, 1857.—This machinery is applied to the manufacture of solid or perforated bricks, &c. having a regular cross section. A vertical screw revolves in an upright cylinder. A rotary motion is given to the helix, by horse or steam power, and the clay is thrown into the upper box of the cylinder as it is dug from the ground, without any other preparation than that of being mixed with water: it is ground, mingled, and freed from hard or filamentous substances, and finally forced down through side-moulding apertures.

George Tomlinson Bousfield, Sussex-place, Loughborough-road, Brixton, Surrey.—*Machinery for compressing Clay and other Materials applicable to the Manufacture of Bricks and other Articles.* A communication. Dated March 5, 1857.—In this invention moulds are employed which correspond in form to the article to be formed from the clay or other material by compression. One, two, or more of these moulds are attached to a mould-carrier, which is moved up and down between suitable guides by an eccentric on the main axis of the machine. The moulds carried by the mould-carriers are bottomless, and into them fit pistons or plungers which receive motion from cams placed on the same axis as the eccentric before mentioned, and there are also other pistons or plungers attached to the top framing of the machine, which enter the moulds when they are moved up by the eccentric.

Samuel Hemming, Bow, Middlesex.—*Material for Roofing or other Building Purposes.* Dated March 21, 1857.—This invention consists in forming from pulp produced from the fibres of straw, grass, hemp, wood, or other similar vegetable productions, by any of the well-known processes at present in use, plain, figured, or corrugated surfaces of material from the said pulp, by causing it to be placed in any convenient manner within dies or moulds of suitable shape or construction corresponding to the form required, until sufficiently dried and hardened (by pressure or otherwise) for removal, the said surfaces being subsequently rendered impervious to moisture by any of the usual preparations.—*Not proceeded with.*

W. Swain.—*Improvements in Heating and Ventilating.* Dated Dec. 27, 1856.—Claims: 1. Heating and ventilating rooms and buildings by means of a tubular chamber situated at the back of a grate or stove, the heated air and products of combustion from the fire being made to pass through tubes in the said chamber, and the air delivered into the room from the external atmosphere being heated by contact with the exterior of the said tubes. 2. Withdrawing the warm and vitiated air of the upper part of the room, and delivering it through perforations at the back of the grate, so as to promote combustion and prevent the formation of smoke. 3. The construction of detached tubular chambers to be used with grates and stoves of the ordinary construction as described. 4. A method of heating hot-houses and conservatories, and charging the heated air supplied to the same with the vapour of water. 5. A method of constructing hot-air chambers. 6. A method of ventilating kilns and hot-air stoves.

J. Bird.—*Improvements in the Manufacture of Articles suitable to be used as Window-heads and Sills, Lintels, and other similar Parts of Buildings.* Dated Jan. 19, 1857.—This consists in manufacturing articles to be used as window-heads, sills, lintels, &c. from fire or other clay, in a dry or nearly dry state, by forcing it into a mould by a great pressure. The articles thus moulded are burned in a kiln, in which are three or more walls or supports, across which the articles to be burnt rest, being kept apart by separating bricks. At the front of the kiln is a screw, which, as the articles shrink during the burning, is used to force forward a block long enough to rest on all the supports, so as to keep the articles constantly in contact with the separating bricks, and never leave them room enough to twist or get out of shape.

E. Clark. — *Improvements in Floating Docks.* Dated Jan. 19, 1857.—This consists in arranging a floating dock so that it may be sunk to receive the ship, and afterwards be floated by pumping the water from the space between the side of the ship and the interior side of the dock.

W. R. Bowditch.—*Improvements in the Manufacture of a Compound to be used as a Varnish for Water Colours, and as a Carrier for Water Colours or Paints.* Dated Dec. 29, 1856.—The patentee takes of milk 1 gall. of hard soap, 2 lb. and of common alum, 1½ lb. The soap is sliced thin and put into the milk, which is heated to about 120 deg. Fahr. and the mixture is stirred until the soap is dissolved. The alum is dissolved in the smallest quantity of water possible, and is then added to the mixture of soap and milk, and thoroughly incorporated by stirring. The mass is next ground fine in a colour mill. When ground the semi-fluid mass is washed with water until the wash water hardly reddens blue litmus paper. It is then left at rest until the water at the top is clear, and this is run off. More water is then added, the whole mixed, left to settle, and the clear fluid drawn off. This is repeated until the clear water on the top of the thick white mass hardly affects blue litmus paper.

N. C. Szerelmey.—*Improvements in Preparing Combinations of Materials for rendering Walls and other Structures Waterproof.* Dated Jan. 2, 1857.—These improved "Greek cements" are produced thus:—The patentee takes water, blood, ground bricks, powdered coppered slag, powdered iron slag, argillaceous earth, and gaseous matter produced from milk. These are boiled together, and called compound No. 1. In a second compound are employed gas or coal tar (or linseed oil, rosin, or asphalte), hydraulic lime, grit, and calcined flint. These are boiled, and are then, by an iron ladle, transferred to a second iron pot, so that the air may come freely in contact, and after the mixture has cooled, it is again boiled until it spontaneously bursts into combustion, and after it has burned a very short time the fire is extinguished by a close fitting cover. This preparation is called No. 2. These cements, though capable of separate use, are preferred to be employed in succession on walls or other structures.

* From the lists published in the *Mechanics' Magazine* and other journals.

## Miscellanea.

A Cambrian Monument.—A deputation from the Liverpool Cambrian Society recently attended at Plas Madoc, near Ruabon, the seat of Mr. G. H. Whalley, for the purpose of viewing the site on the Eglewseg plateau, offered by that gentleman for the erection of the Cambrian monument in honour of Prince Llewelyn, and the Crimean and other heroes of Wales, including those now fighting the battles of their country in India, and of all Welshmen entitled in times past "or to come" to the respect and gratitude of their countrymen. On the spot they were met by a committee of the National Eistedfod, to be held at Llangollen in September next. Mr. Whalley stated that Lady Hall, and others of influence, were warm supporters of the movement. The company then adjourned to a tent on the apex of the mountain, where various appropriate resolutions were passed approving of the project and promotive of it.

The Brotherton Memorial. — You have done good service to the public by giving a view of the Brotherton Memorial, and as one interested in good monumental works I am especially glad; and if I may venture an opinion, I would pronounce the lower and the upper part as decidedly good. The centre or middle portion, however, shows such an evident amount of weakness, that it would be well for the architects and committee to reconsider this portion. I would suggest to strengthen the supports by (instead of one column at the back of figure), three in the form of a trefoil. Their junction also with the lower part is poor, and has a certain meanness about it, and to get rid of this I would add a pierced parapet immediately over the cornice: and these, instead of detracting from, would add to the beauty of the design, and the small amount of extra expense would be for the committee hardly worth their consideration.—W. L.

The Gurney Testimonial, Stratford.—The design of the "Gurney testimonial" has been prepared by Mr. G. A. Dixon, surveyor to the Local Board of Health, says the *Chelmsford Chronicle*, and will be submitted for the approval of the provisional committee prior to a public meeting of the inhabitants which will be convened at an early period, when it is expected the design will be adopted, and a subscription promoted for carrying out the object. The site for the erection of the obelisk is the Broadway, Stratford, the west end of St. John's Church.

Institution of Mechanical Engineers.—The general meeting of members of this institution was held on Wednesday in last week, at the Institution, Birmingham; Mr. S. Lloyd in the chair. Several new members were elected, and the president, vice-presidents, and members of council, were nominated for election at the ensuing annual meeting. The first paper read was a "Description of Naylor's Improved Steam-Hammer," by Mr. Charles Markham, of Derby: the next was, "On Lighting Railway Trains with Gas, with a Description of Mr. T. J. Thompson's System," by Mr. J. Kitson, of Leeds: the last paper was a "Description of a Ventilating Apparatus for Buildings," &c. by Mr. Samuel Thornton, of Birmingham. After the meeting, a hydraulic engine, by Mr. David Joy, of Leeds, was shown at work, designed to be used as a simple and convenient motive-power for several purposes where steam-power is objectionable, or not available.

Non-Consumption of Smoke.—Mr. William Jackson, the extensive builder upon the Gore Estate, at Kensington, was last week summoned to the Hammersmith Police Court, for not consuming the smoke of a temporary steam furnace at Gloucester Lodge, used in sawing timber. Mr. Walls, his manager, appeared in his place, and it was stated on his behalf that he was not likely to do anything willingly to injure a property on which he had a million of money at stake. Plans showing the buildings erected, and to be erected, in Prince Albert-road, with a view of the new entrance into Hyde-park, were exhibited, in order to show the value of the interest Mr. Jackson had in the property, and it was stated that no expense would be spared to consume the smoke. The minimum penalty of 40s. with costs was inflicted and paid.

The Birmingham Borough Surveyor. — A special meeting of the council of this borough has been held to take into consideration the resolution passed, which recommended the dismissal of the borough surveyor, Mr. Pigott Smith, on account of his refusal to appear before them, to answer questions on the matters in dispute betwixt him and the council. The confirmation of this resolution was moved by Mr. S. Briggs, and seconded by Mr. Brinsley. Alderman Hodgson moved an amendment in favour of inquiry into the charges, and Mr. Sturges one requiring the resignation of the borough surveyor; but the original motion for dismissal was carried by 31 to 20, five being neutral.

Bristol Mining School.—The first lecture of the session was given by Mr. Thomas Austin, C.E. on "Surveying and Drawing Instruments." Much importance was at one time attached to the introduction of several wires into the warp of the wire tape; but as these wires were necessarily converted by the woof into helices in the process of manufacture, this tape was more liable to stretch than the ordinary tape. The double linen tape, with ribbed warp, was the least objectionable of any of the tapes, and was very useful in taking offsets, or amongst buildings, or other intricate work. The American rule was an implement usually made in yard or two-yard lengths, in pieces of horn or whalebone, four or six inches long, about half an inch wide, and one-sixteenth of an inch thick, and made to adhere together by the application of thin glue: they were then reduced to their proper form, and the inches marked off upon one of their surfaces: at these marks a hole was drilled, through the entire number, and a silver wire drawn through the holes. These, when completed, were remarkably correct. Offset rods and staves, station staves and surveying arrows, and angular instruments used in field work, were next described; also the plane theodolite, the circumferenter, and its various improvements, the theodolite, quadrant, sextant, &c. &c.

The Joiners' Strike at Manchester.—Since our last notice of this strike, three of the local architects, of long standing,—Messrs. Richard Lane, William Hayley, and Isaac Holden, have offered to act, in conjunction with the mayor, as arbitrators in the dispute, and the master builders have at once unequivocally accepted the arbitration, and agreed to abide by the decision of the arbitrators. The committee of the workmen, in their reply, however, merely thank the architects named, and refer them to a copy of another letter addressed to the secretary of the masters' association, in which they speak of a deputation being "prepared to meet a deputation from the builders and the gentlemen you name in your letter to settle this dispute," at the same time announcing a "resolution" they had just come to, to "equalize the working time at the rate of fifty-six hours per week the year round, or otherwise adhere to the rules last issued by the operatives, viz. 58 hours in the summer months, and 53 hours in the winter months." This, therefore, is neither a frank acceptance nor an equally frank refusal of the proposed tribunal, and is too like the fast-and-loose understanding of some previous arbitrations of a similar kind we have some recollection of, to yield, we fear, any satisfactory result in the present strike.